**CONVENTION ISSUE:**
Coordinated Associations; C&S Section; Data Systems Division

September 15/22, 1969

SEP 15 1969

# RAILWAY AGE

THE TRANSPORTATION WEEKLY

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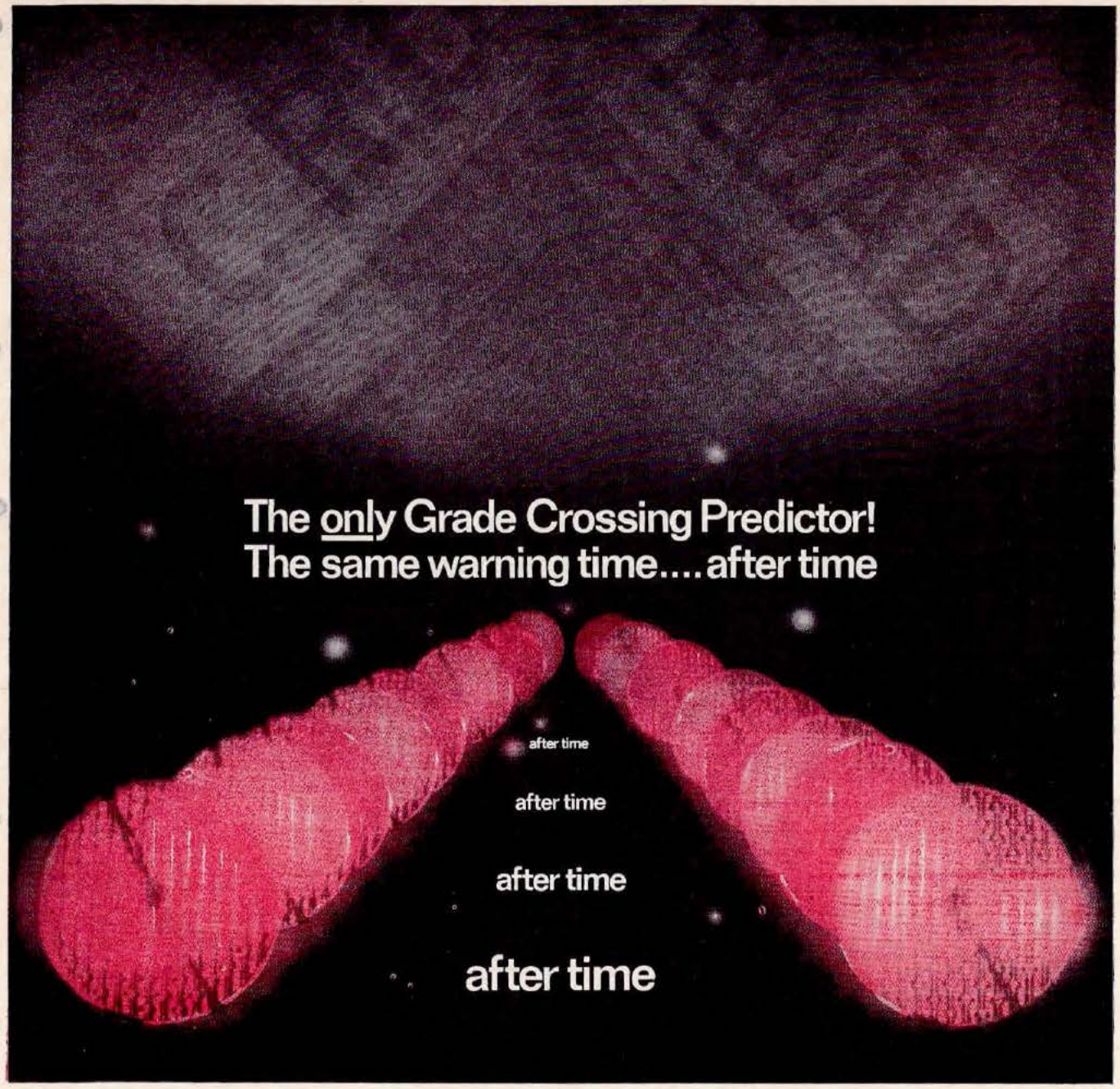


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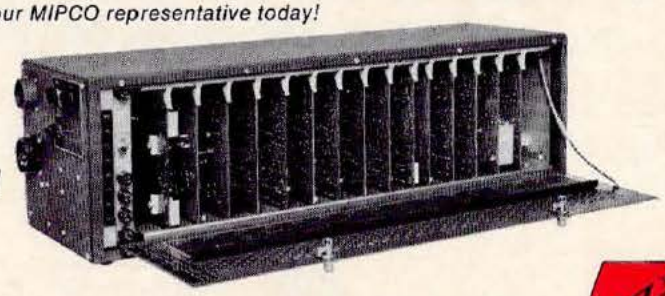

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**Brighton, Sussex, England**
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International Editor:
John Levett

Contributing Editors:
Norman E. Gillespie
3205 Chelsea
Orlando, Florida 32803

Charles Layng
6019 Nashua Ave.
Orlando, Florida 32809

E. L. Woodward
876 Chattanooga Ave.
Pacific Palisades, Calif. 90272

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## SPECIAL CONVENTION ISSUE

Prepared for the Coordinated Associations (Chicago, Sept. 15-17); AAR's C&S Section (Montreal, Sept. 16-18); and AAR's Data Systems Division (San Francisco, Sept. 22-24).


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### . . . AND COMING SEPT. 29

**TOMORROW'S RAILROADS:** No. 9 in this series zeroes in on the problems of moving people—and explores the railroad industry's role in arriving at solutions. Also: The September Traffic Poll tells what special features shippers want in new freight cars.


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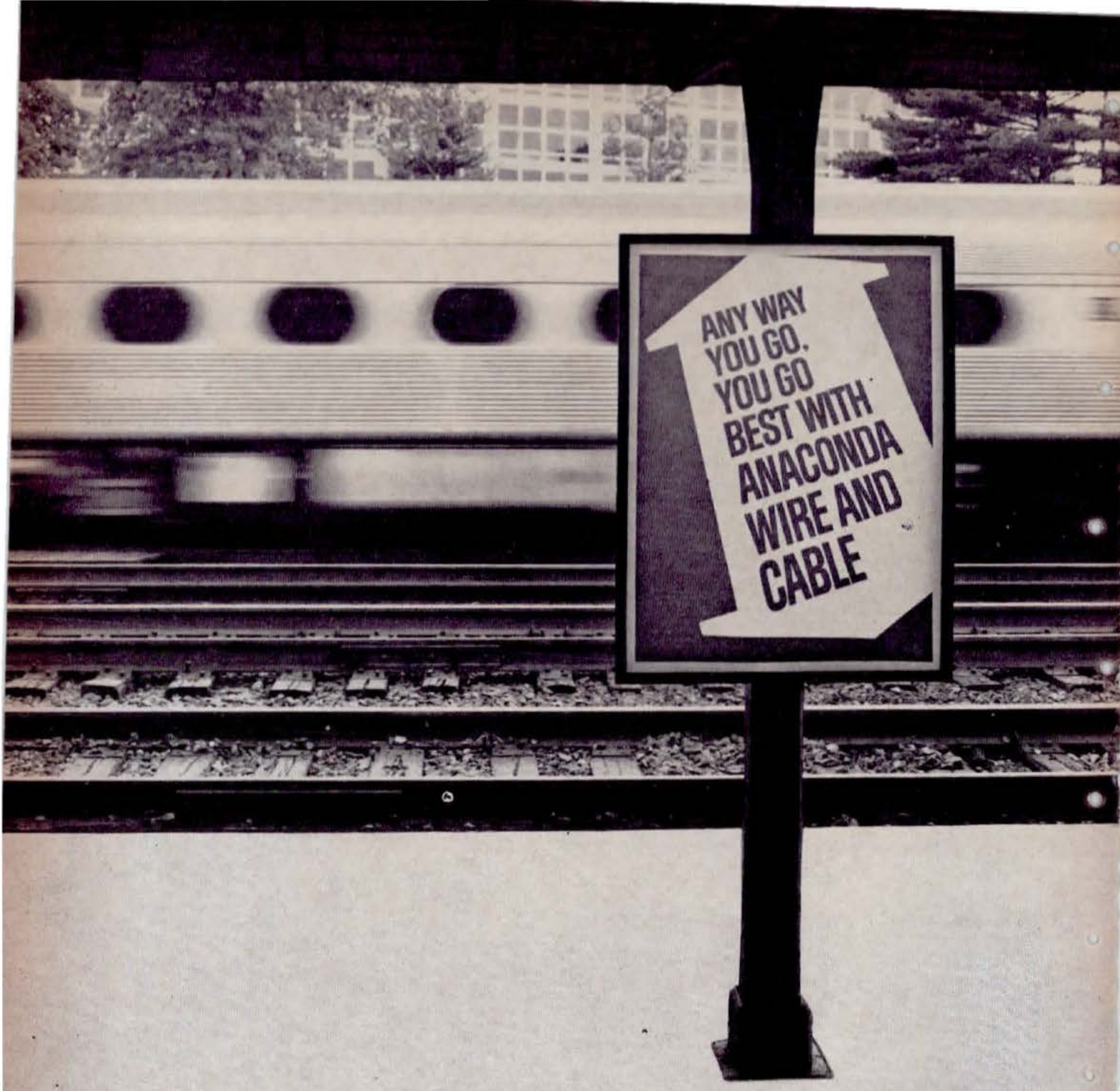


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# SHORT AND SIGNIFICANT

**UP expanding at its Omaha headquarters**

Union Pacific's headquarters office building in Omaha is already billed as the largest building in the nation devoted solely to railroad offices—and it's going to get bigger. UP will construct a multi-million-dollar addition, with work scheduled to begin early next year. Three floors of the 12-story addition will be given over to equipment supporting the road's expanding electronic data-processing operations. And UP is looking ahead to more than just a bigger EDP setup. Says President Edd H. Bailey: "We anticipate the consummation of the Rock Island merger will also create a need for more space in our Omaha headquarters building."

**Speirs gets nomination to Retirement Board**

Neil P. Speirs is President Nixon's nominee to succeed A. E. Lyon on the three-member Railroad Retirement Board. Speirs, former president of the Switchmen's Union of North America, has been an assistant president of the United Transportation Union since UTU was created through merger of SUNA and three other operating organizations.

**Southern approves CNO&TP merger plans**

The executive committee of Southern Railway and the boards of directors of the Cincinnati, New Orleans and Texas Pacific have approved a plan whereby the CNO&TP will merge with four of its wholly owned subsidiaries. CNO&TP would be the surviving company. Southern has common stock control of CNO&TP. Up to 745,000 shares of Southern's no par common stock and up to 77,000 shares of its $20 preferred stock would be issued to CNO&TP shareholders under the exchange options being offered.

**Strikes on a railroad: The costs are many**

When railroad men start adding up the cost of work stoppages, there's one that's sometimes overlooked: The cost of strike benefits, paid out of the Railroad Unemployment Insurance Account—which is financed solely by railroad tax payments. What's this cost amount to? As Railroad Retirement Board's Thomas M. Healy adds things up, strike benefits have totaled $9 million over the past five fiscal years. Payments were down, for the fiscal year ended June 30, even though employees involved in 17 different work stoppages were covered. But that might have been expected: As Healy points out, benefit payments for the preceding fiscal year included more than $1.9 million resulting from the July 16-18, 1967, shopcraft strike.

**FHWA backs bigger trucks legislation**

To no one's surprise, Federal Highway Administrator Francis C. Turner has recommended enactment of legislation to permit larger truck sizes and weights (RA, 7/14, p.8). However, he did not endorse all aspects of the bill, H.R. 11870. Mr. Turner said that a modified bill from that now under consideration could provide economic benefits which "might" be passed on to the public. At the same time, however, he urged that the bill's effective date be held up for three years to enable the DOT to execute standards aimed at assuring highway safety.

**Telpak sharing defended by AAR to FCC**

A Federal Communications Commission bureau chief has found that users of bulk communications under Telpak tariffs may not share such usage. The chief of the Common Carrier Bureau found that sharing regulations of the domestic common carriers are discriminatory and recommended that American Telephone & Telegraph Co. and Western Union Telegraph Co. should be directed to eliminate the existing discrimination. AAR filed an exception saying that "elimination of Telpak sharing would constitute an infamous first step toward the elimination of common carrier communications services for the most significant single class of customers in this country."

# MONDAY MORNING REPORT

# RAILS, GOVERNMENT: AN ODD COUPLE?

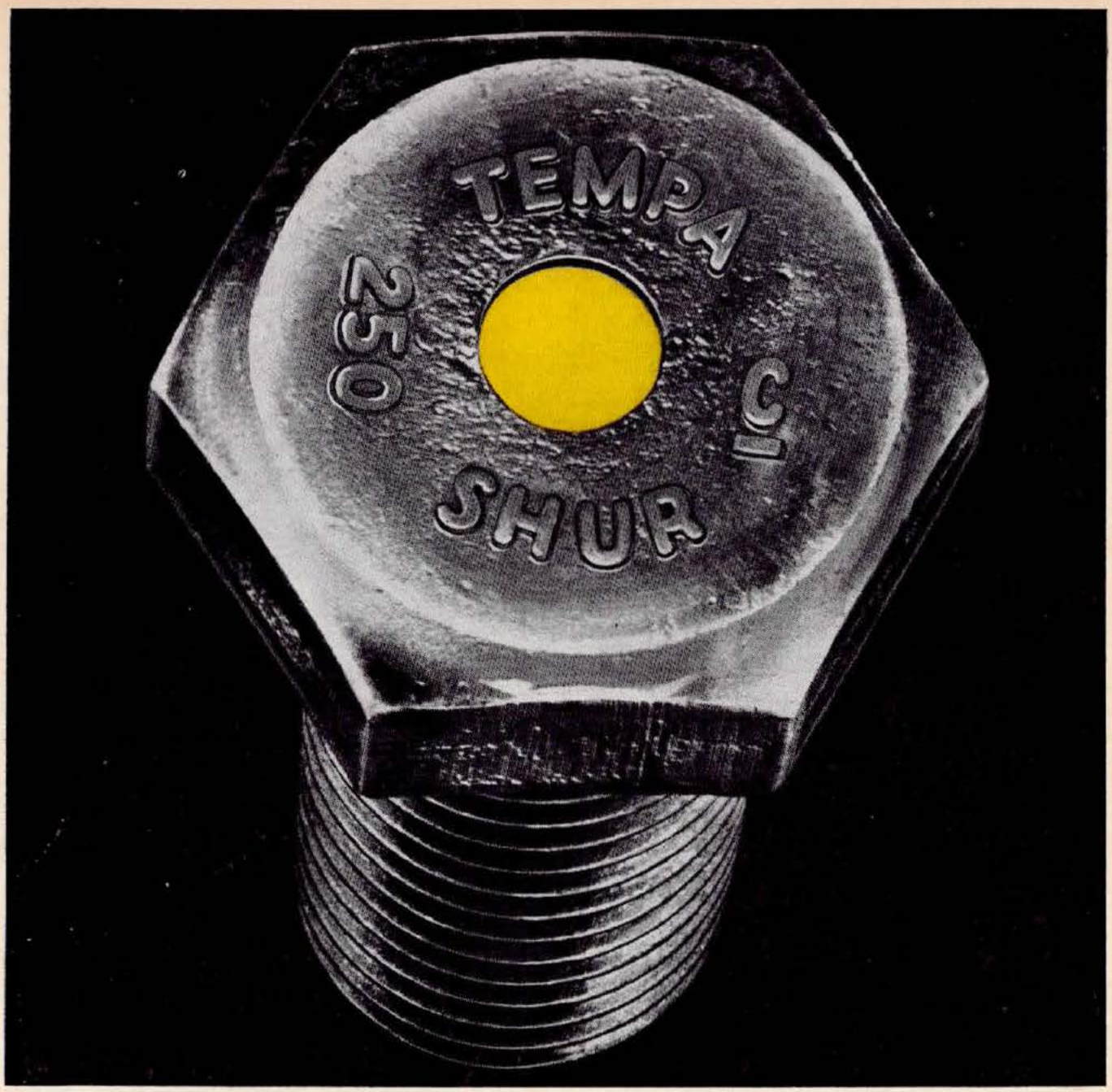
Government regulatory agencies and railroad managements have seldom been what you might call brothers-in-arms. Rather, they've often seemed to be poles apart in their thinking, where there is an official government interest in some aspect of railroading. They are sometimes still poles apart. But there is evidence that, in one major area anyway, thinking is along parallel lines.

## ON TRACK STANDARDS, THERE MAY BE A COMMUNITY OF INTEREST . . .

The area in question: track standards. This subject—of what constitutes proper track construction and maintenance—is getting more attention than ever before. Safety considerations are probably the most important factor. But economic considerations are not far behind. More and more, the problem seems to be one of developing safety with economy, and the interest shows up in a variety of ways. One involves the efforts of railroads, suppliers and government to develop track-measuring cars which can serve as an aid to allocation of maintenance funds. Another involves governmental interest in legislation which would make safety a matter for Federal regulation. Railroad men wince when they think of this legislative approach and its implications. But even as they may disagree on methods, industry and government people can find themselves thinking in parallel on goals.

## . . . AND AGREEMENT ON GOALS CAN BE A BIG "PLUS"

Track and bridge-and-building officers and supervisors got a sample of this parallelism last week at their annual meetings in Chicago, as a railroad president and a government researcher came up with similar thoughts in the "goal" department. Chicago & North Western's Larry S. Provo led off, observing that "I have never obtained a satisfactory answer to the question: Precisely to what degree shall a track be maintained for a given amount of train operations? I predict the establishment of such definite standards will be one of the breakthroughs in M/W planning and budgeting in the near future." Then came Kenneth L. Lawson, senior engineer in DOT's Office of High Speed Ground Transportation, with comments on specifications which would likely be developed if a legislative route is followed. "Performance specifications" would be a goal, he indicated, and they would take into account such factors as train speeds and commodities carried—factors which fall within Provo's phrase "train operations." And just maybe, as one observer summed it up, parallel goal-thinking like that holds the seeds of future benefits—for all concerned.

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RAILWAY AGE
THE TRANSPORTATION WEEKLY
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# WEEK AT A GLANCE

## Net rail income shows little change

Increases in taxes and operating expenses were the prime reasons why rail income for the second quarter of this year showed little change from the same period last year. The 74 Class I railroads who filed recent reports with the ICC, put estimated net income at $168 million—a $2 million increase over the second quarter a year ago.

Operating revenues rose about $157 million to $2.9 billion, largely as a result of a 2.6% increase in freight traffic and higher rates. But most of this gain was absorbed by both higher taxes and operating expenses. The total tax bill rose 9.8%, from $253 million to $278 million. Operating expenses, largely due to higher wage rates and material costs, rose 5.6%.

Net income for the first half of this year was off by 4.6%, totaling $265 million compared with $278 million a year ago. Operating revenues managed to keep just ahead of expenses as both rose more than 5% for the first six months; revenues increasing from $5.4 to $5.7 billion and expenses from $4.2 to $4.4 billion. The total tax bill for the first half of the year rose 10.7%.

## ASTRO to study tomorrow's transport needs

The Association of American Railroads is creating a special study committee to develop recommendations for a balanced transportation system, geared to the needs of the future. The committee, America's Sound Transportation Review Organization (ASTRO) "will be charged with making an in-depth review of the adequacy of present transportation policies and with recommending whatever measures it considers advisable to assure a balanced and progressive transportation system," said AAR President T. M. Goodfellow.

The organization's executive director will be Robert W. Blanchette, a Penn Central attorney.

## Simmons-Boardman to publish magazines for Metroliners

Passengers on the Penn Central's Metroliners between New York and Washington will soon have a publication all their own. Beginning Oct. 2, the Simmons-Boardman Publishing Corp. will publish a weekly magazine which PC's on-train staff will distribute to Metroliner passengers and to all parlor-car passengers on other PC trains between New York and Washington.

The new publication (photo at right shows a pilot issue) will be printed in two editions—one for northbound riders and one for southbound. The paper, called METROLINES, will contain stories about this new high-speed passenger service, as well as useful travel information for Metroliner passengers—where to go, what to do, what to see in the cities along the Metroliner route.

A. J. McGinnis, president of Simmons-Boardman, describes METROLINES as an "in-transit publication" for a large and unusual audience.

Initial distribution of the new METROLINES will be 7,000 a week in each direction.

According to U.S. Department of Transportation surveys, 38% of all Metroliner passengers have family incomes of $25,000 or more per year; 88% live in the Boston-New-York-Washington corridor; more than 50% are frequent travelers; 76% of all passengers are under 50 years of age. In the DOT surveys, 28% of the passengers said their most recent trip was by air, yet 87 out of 100 said they'd make their next trip by Metroliner.

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GUS WELTY

# LINES ON LABOR

**12:01 A.M. IS THE TIME.** Saturday, Oct. 4, is the date. And the event? Quite possibly, a railroad strike — one which could make history.

**THE INTRIGUING THING** is not that the nation's railroads and four shopcraft unions are deadlocked. This could have been predicted. What can't be predicted is the strategy that will be followed — by the unions, by the carriers, by government. Any logical outline of the options now available would have main points, sub-points, sub-sub-points and sub-sub-sub-points.

**SETTLEMENT VS STRIKE** is the first option. If strike is chosen, another option comes into play: Nationwide strike vs selective strike. In either case, the unions have a further choice: Give advance warning, or hit from ambush. The railroads have their own set of alternatives. They, too, are free to resort to self-help Oct. 4. If a strike seems likely, they can press for an emergency board, or for Congressional action. They can implement a number of rules changes, either as an initiative move or as a reaction to a strike, nationwide or selective. Finally, there's government. This will be the Nixon Administration's first serious brush with a major rail labor dispute. Administration sources have let it be known that they don't much care for intervention. It remains to be seen whether this is a policy or a ploy, a statement of conviction or a pressure-play to produce a settlement.

**THE SELECTIVE STRIKE** shapes up as a good possibility. The shopcrafts, perhaps, find encouragement in the way the railroads were whipsawed to defeat in the crew-consist dispute. But there are essential differences in the cases. The shopcraft dispute involves virtually all carriers, it's been handled nationally and the "timetable" is the same for everybody. The crew-consist dispute involved fewer carriers, it was handled locally and action-timetables varied. The union was able to pick-off its victims individually, and retaliation by those few other roads free to act was not effective.

**IF THERE IS IRONY** in the shopcraft situation, it lies in the fact that the unions appear — underscore "appear" — to have little interest in an emergency board. They have already rejected arbitration. Yet in the most recent go-round with the shopcrafts, arbitration (imposed by Congress) provided the eventual settlement. And the terms of that settlement were staggering to the railroads. It's odd, to see anybody turn his back on what's been a winning formula.

# Traffic officers should set freight car rents, says AAR

The AAR last week repeated its argument before the ICC that the responsibility for setting freight-car rents should be moved from operating to traffic officers. The AAR statement came as a reply to two disagreements with the July 15 examiner's report favoring the AAR plan, which was filed with ICC last December. According to that plan, the new AAR compensation committee would have power —subject to ICC approval—to handle per diem rates for use of cars by railroads that don't own them, mileage rates for cars not subject to per diem charges, demurrage and storage charges payable by shippers, and allowances for equipment furnished by shippers.

Under Section 5a of the Interstate Commerce Act, railroads have an agreement that says the general committee of the AAR operating-transportation division can decide car charges. However, traffic men always are involved. Efficiency would be promoted if traffic men had the major responsibility, AAR says. The compensation committee consists of 19 railroads' chief traffic officers, the traffic officer of the American Short Line Railroad Association, and representatives of the AAR general committee.

Disagreeing with the ICC examiner's approval are the Manufacturing Chemists Association and the National Industrial Traffic League. However, examiner Robert N. Buchmore, former NITL general counsel, supports the AAR contention that the proposed agreement is clearly permitted under Section 5a and would be a help to the national transportation policy.

In its statement last week, AAR said "No contention has been made by any party to this proceeding that the national transportation policy would not be furthered by granting relief from the anti-trust laws, and that is the only standard by which the Commission can judge the agreement. The agreement is made by and between railroads, and the question is not whether railroads have made the best possible agreement, or have made the agreement that is most pleasing to shippers, but only whether the national transportation policy would be furthered by relief provided . . . from the anti-trust laws."

The main thing MCA and NITL object to, AAR says, is transfer of power over certain car rates to traffic officers.

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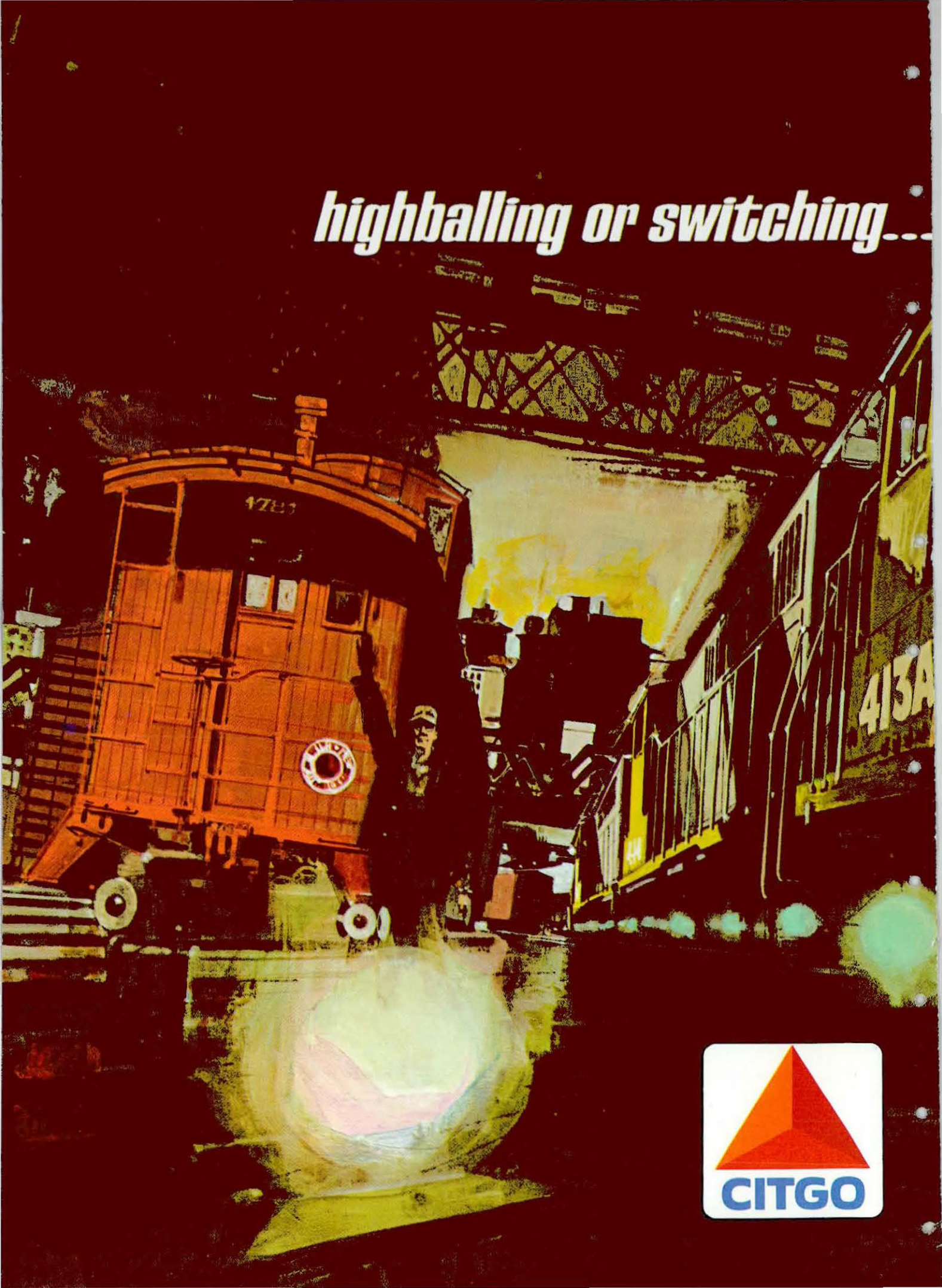
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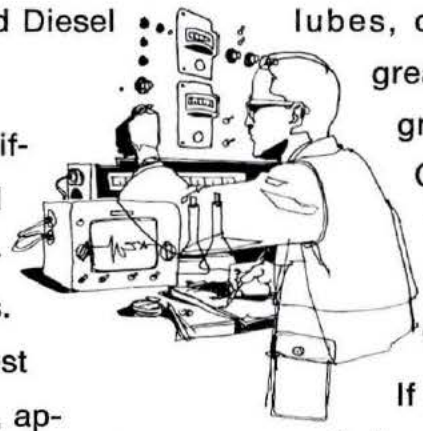

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Michael J. Walsh, Jr. is Assistant Vice President and General Traffic Manager for the St. Regis Paper Company, and he thinks a lot of Penn Central's freight service.

"Improved service and economy in transportation are the main reasons St. Regis is shipping Penn Central today. As far as I'm concerned, we couldn't move without it."

It took a lot of hard work to earn praise from Mr. Walsh and others like him. Ironing out the kinks in the biggest merger in American history isn't an easy job.

It's tough and complex. And it takes time. Fact is, we're still working on it.

And we won't stop working at it until the NEW Penn Central is the best railroad in the world.

Maybe that's why Mike Walsh says nice things about us.

**The New PENN CENTRAL**

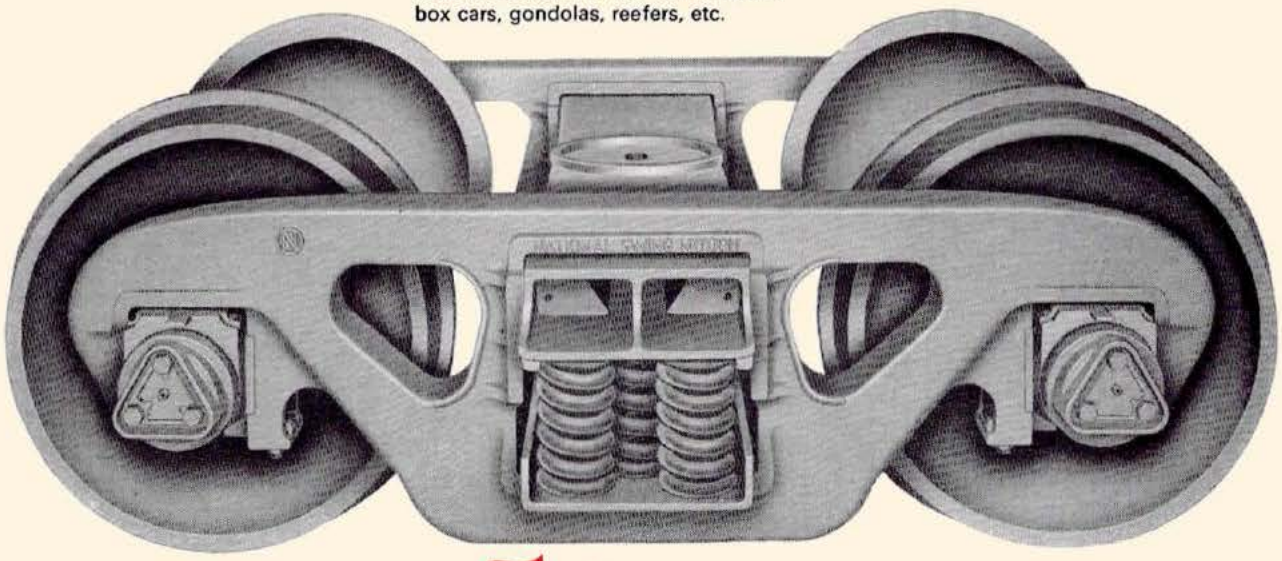
**We're Out to Move Your Freight**

Circle 11 on coupon page 52

# National introduces the High Speed Truck of the 70's

## available in 1969

6 x 11 size shown. Also available soon
6½ x 12 design for 100-ton hoppers,
box cars, gondolas, reefers, etc.



# National Swing Motion Truck

If all your freight car wheels were new — and remained new — you wouldn't need National Swing Motion Trucks.

Unfortunately, only about the first 10 percent of the life of a wheel can be considered "new wheel" conditions. That means that for about 90 percent of the life of your wheels your freight cars are restricted to a critical speed of *about 55 mph or less.* Exceeding this slow critical speed leads to hunting . . . to extreme wear . . . to risk of derailments. And perhaps most important of all — it also causes damage to cars and lading from an uncontrolled ride. For the first time, lightly loaded cars (up to about 50% load) now ride as well as fully loaded cars.

National's revolutionary Swing Motion Truck design, using standard adapters and conventional roller bearings, positively prevents unstable hunting at speeds *up to and exceeding 93 mph.* And the new National Swing Motion Truck does it with either light or loaded cars . . . with either brand-new or worn wheels.

With few exceptions, National Swing Motion Trucks provide significantly better car roll protection than other antiroll devices.

The net result? Railroads can now offer shippers faster delivery and less lading damage. At the same time, dangerous and time-costly derailments from an unstable ride become a thing of the past. And too, maintenance costs plummet through reduced wear on wheel flanges and treads, and on adapters and running gear in general.

National practically wrote the book on railroad couplers. Now we're ushering in a new era in safe, high-speed freight car trucks for the 70's with the National Swing Motion Truck.

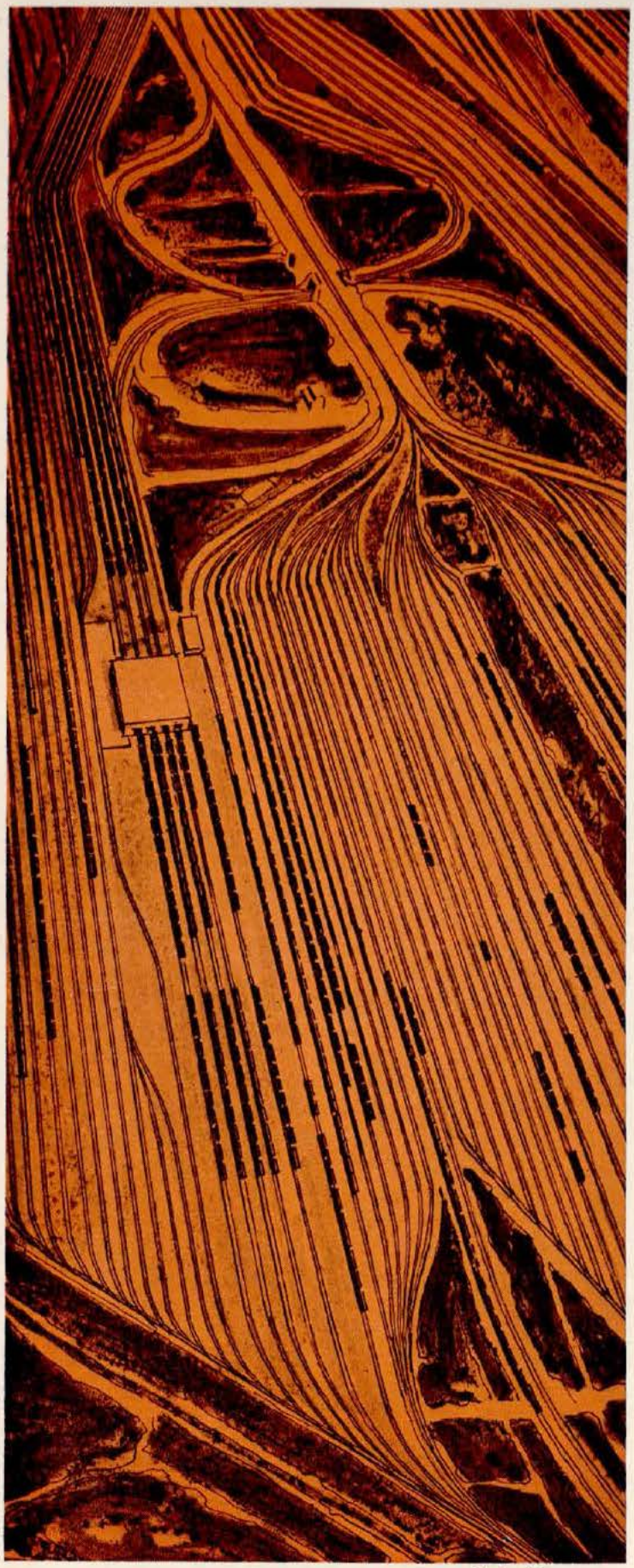
**NATIONAL CASTINGS DIVISION**
**Midland-Ross Corporation**

**GENERAL OFFICES:** South Dock Street, Sharon, Pa., 16146.
**SALES OFFICES:** Chicago, Ill. • Philadelphia, Pa. • Richmond, Va. • St. Louis, Mo. • San Francisco, Cal. • Cleveland, Ohio.

Circle 12 on coupon page 52

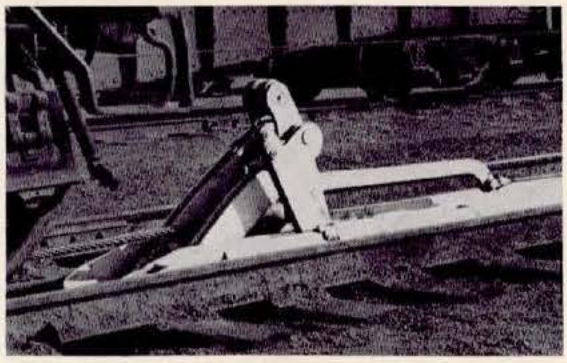
A-4650

# THE NEW YARDS...



## How will they compare on Car Repair Costs?

Will the car repair facility be as efficient as the yard? An RMC Spot Car Repair System in a new yard will deliver significant savings! With push-button control, cost reductions are gained in these areas: (1) At least 100% increase in labor efficiency over methods used previously. (2) Profits on AAR Billings. (3) Reduction in per diem costs. (4) 50% to 90% savings on switch engine hours. ■ There now are 75 tracks being served by RMC equipment. During the planning stage, may we discuss how these systems can contribute major savings? **RAILWAY MAINTENANCE CORPORATION, Box 1888, Pittsburgh, Pennsylvania 15230.**

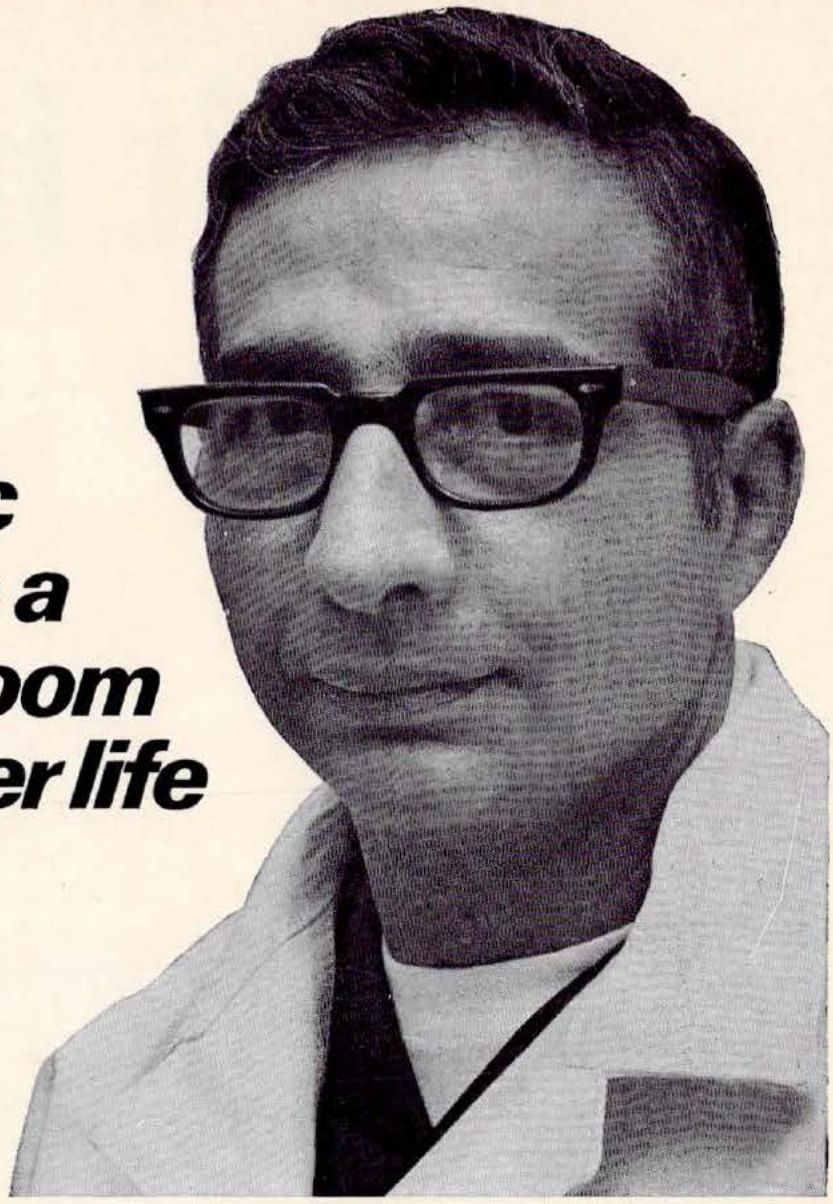


RMC

## SPOT REPAIR SYSTEMS

Circle 13 on coupon page 52

# "Doctor" Vic operates in a dust-free room to put longer life into your traction motors.



National takes utmost care in every detail in the repairing of traction motors and generators to assure you longer life and trouble-free service. For example: Motors are assembled in a clean room—air-conditioned and electrostatically filtered to insure immaculate cleanliness. Here, 12-year veteran, Victor Terrible, and his team employ special tools and handling equipment to make sure that bearings are accurately aligned in housings and gauged for proper tolerances. All parts are thoroughly cleaned and inspected. Grease is accurately weighed for each part. Spacers, seals, slingers are precisely fitted.

Our close attention to details, years of experience and unbeatable facilities spell the big difference between the values we give you and those which just "get by." You get a lot more than copper in a National job. For service, call 614/488-1151. National Electric Coil, Columbus, Ohio 43216.

DIVISION OF McGRAW EDISON

***You get a lot more than copper in a* National Electric Coil *job.***

Circle 14 on coupon page 52

# Don't hold up

**PROVIDES 7 FUNCTIONS ON ONE PANEL ( Wt. 350 Lbs.)**

**1. BRAKE CONTROL**
- (a) 26-F Service Portion
- (b) 26-F Quick Release Portion
- (c) 90 Cu. Inch No. 16 Pipe Volume
- (d) Branch Pipe Strainer
- (e) J-1 Relay Valve
- (f) DT-3A Double Check Valve— Independent and Automatic Brake

**2. PENALTY SERVICE APPLICATION**
- (a) P-2-A Application Valve
- (b) DT-3A Double Check Valve— No. 26 Pipe Suppression

**3. VENT VALVE-EMERGENCY**
- (a) KM or No. 8 Vent Valve

**4. BREAK-IN-TWO, EMERGENCY SANDING, POWER CUT-OFF, AND DYNAMIC BRAKE NULLIFICATION FROM ANY EMERGENCY**
- (a) A-1 Charging Cut-Off Pilot Valve
- (b) 90 Cu. Inch Volume Reservoir

**5. MU CONTROL WITH NO. 6 BRAKE EQUIPMENT**
- (a) F-1 Selector Valve Portion

**6. DYNAMIC INTERLOCK**
- (a) Magnet Valve Portion
- (b) DT-3A Double Check Valve Portion— No. 13 Actuating Pipe

**7. OVERSPEED CONTROL**
- (a) Magnet Valve Portion

**The functions provided by Nos. 5, 6 and 7 may be omitted by substituting blanking pads for the operating portions, without change in basic piping or wiring.**

# the train.

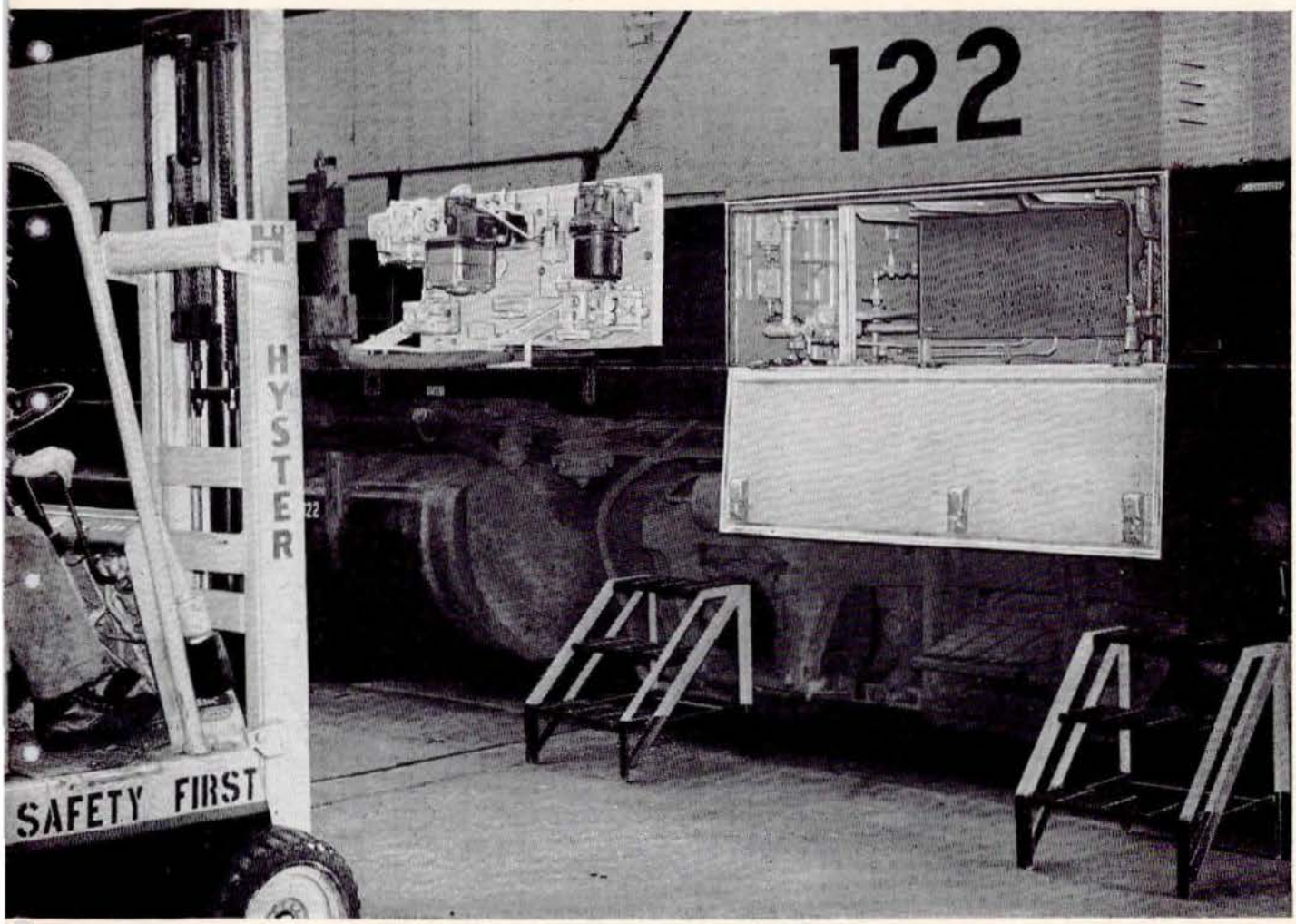
You can see why railroads are installing PORTORACK and leaving down-time behind them.

PORTORACK is a complete service-ready unit of essential valves for 26-L Brake Equipment. When it's time to maintain valvular portions, a lift truck removes the PORTORACK from the locomotive and carries it to the work bench. It is replaced by a stand-by PORTO-RACK which has been functionally tested as a unit.

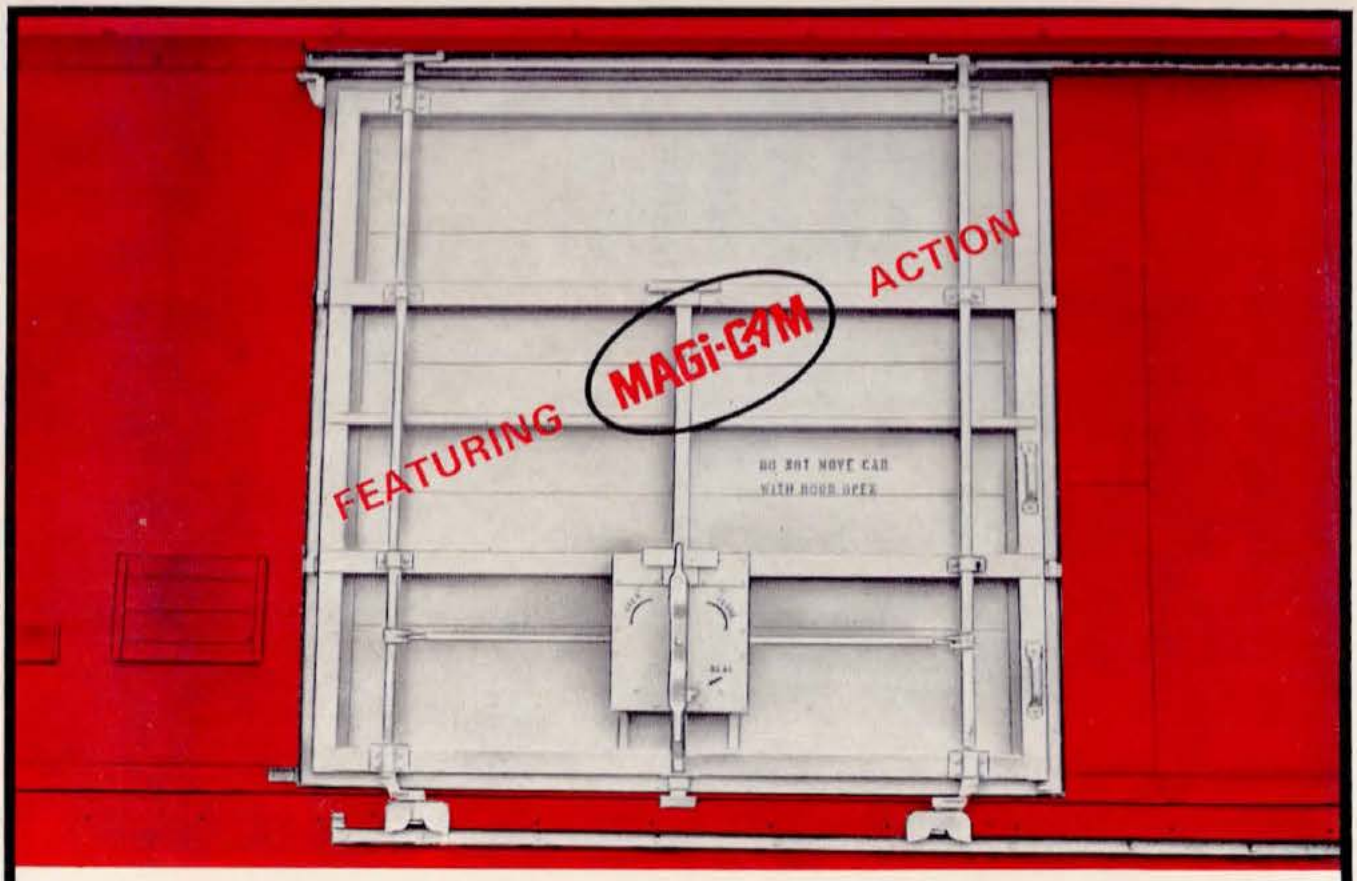
Tighten a few bolts, perform the daily test and your locomotive is ready to roll. There are no holdups, no delays. Add up the savings over a year and you will see why more and more railroads are equipping their locomotives with PORTORACK. Want to hear more?

MEMBER RPI

**NEW YORK AIR BRAKE COMPANY**
A UNIT OF GENERAL SIGNAL CORPORATION
230 PARK AVENUE · NEW YORK, N. Y. 10017




Circle 15 on coupon page 52



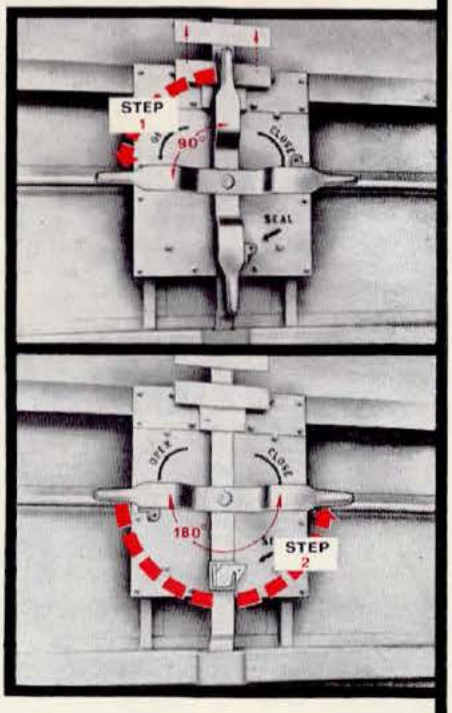

# New SUPERIOR PLUG DOOR, Customized to New Equipment, Repair Stretch-Out, Upgrading Programs

Now opening and closing plug doors is an easy, safe, positive one-man operation. This new Superior Plug Door with "Magi-Cam" action makes it so. "Magi-Cam is an ingenious engineering concept, the heart of which is a computer-designed timing plate. All door opening and closing steps are sequentially programmed through this arrangement.

Step 1: A 90° turn of the operating handle cams locking bars out of five engaged positions without rotating pivot cranks. Step 2: Another 180° turn cranks the door away from the door frame and car side, ready to be rolled aside and secured. One man does it easily, quickly, safely. Closing is equally simple.

This new Superior Plug Door is available in any height, width and thickness. And as double doors. This lets buyers have "Magi-Cam" and full Superior quality features in any size required by their new equipment, repair, stretch-out and upgrading programs.

Let us tell you all about this Superior Plug Door's many features. Ask us about parts standardization, anti-pilferage, safety considerations, size versatility and the fabrication excellence for which Superior is famous.




**CHICAGO RAILWAY EQUIPMENT DIV.** EVANS PRODUCTS CO.

1928 WEST 46th STREET, CHICAGO, ILL. 60609 • Phone 312-523-0800

Circle 16 on coupon page 52

# In the railroad business there aren't any shortcuts.

When that train gets rolling it's got to keep right on going. You can't afford hold-ups, especially when they're preventable.

That's why over 100 railroads have gone more than 10 billion miles with Atlantic Richfield lubricants.

Sinclair Gascon GL Supreme: A highly dispersant oil that gives cleaner engines and longer filter life. Excellent alkalinity retention permits extended oil drain periods with minimum wear.

Sinclair GL-1635: Also a superior dispersant oil with a special additive that makes for a cleaner engine with longer intervals between oil changes.

Rust is no problem for Atlantic Richfield either. We make Sinclair L-300 and L-340 Lithium Roller Bearing Grease, both of which are fully approved by the AAR.

Call or write soon for more information on Atlantic Richfield lubricants: The ones that go as far as you do.

Sinclair

AtlanticRichfieldCompany

155 North Wacker Drive
Chicago, Illinois 60606

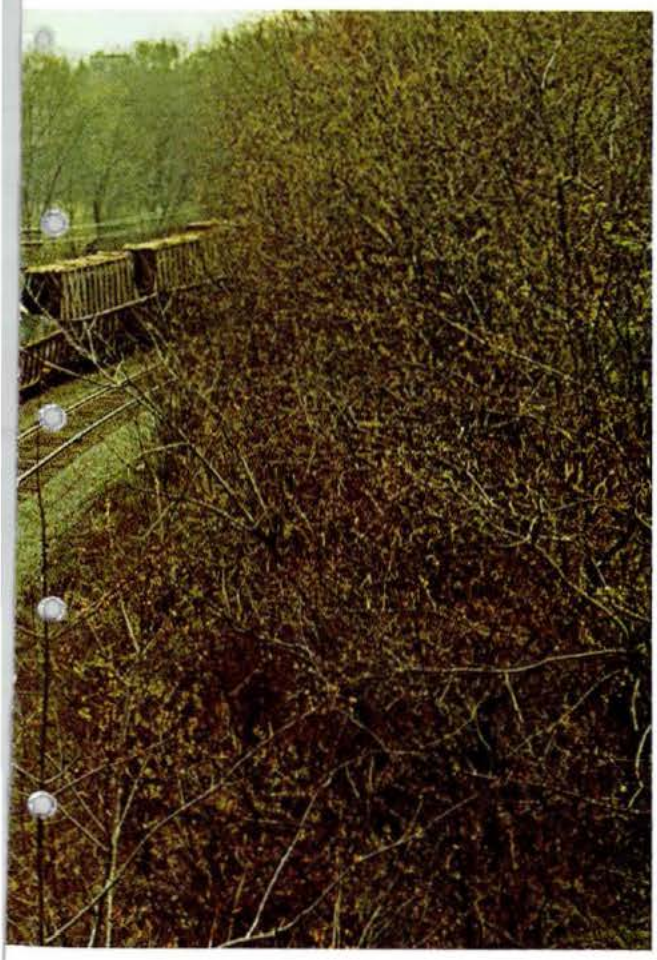
Circle 17 on coupon page 52

RPI
RAILWAY PROGRESS INSTITUTE

# Add a few hundred miles to your assembly line.

# And subtract a lot of headaches.

Pullman-Standard sells freight cars. And any part thereof.



You can order everything you need to assemble a freight car, or just the sides. Or roofs or doors or cushioning units. We can work out a shuttle system that schedules deliveries to meet your production timetable. Or even load cars for spotting in the right positions along your own assembly line.

Start seeing savings in down-time and man-hours and begin enjoying a smooth operation that results from single-source delivery.

You can share the economies and efficiencies of our full-time car parts assembly line. Why not hook it up to yours?

**Pullman-Standard**
WORLD'S LARGEST RAIL CAR MAKER
200 South Michigan Avenue, Chicago, Illinois 60604

*A Division of* Pullman Incorporated

# IT'S NEWS—IT'S NEW!

MUCH MORE PERFORMANCE

•

MUCH MORE PROFIT



**YESTERDAY**

. . . . has gone and so have most of its ideas, customs and methods of producing finished axles.

## THE NEW SIMMONS PLANET AXLE LATHE

- Two 360° PLANET hydraulic tracing systems control all movements of carriages and cross slides.
- Tracing system provides constant feed *regardless* of direction of travel.
- Torque tube inter-connection with Acme screws for moving headstocks assures accurate centering of workpiece.
- Punch card control system automatically controls speeds and feeds, which are infinitely variable.
- Elimination of hoses due to unusual template mounting.
- Friction type driving mechanism with removable Urethane driving rings and pressure equalizing features which assure maximum driving contact with the workpiece.
- Anti-friction ball way cartridges on headstocks and carriages. X design rollers on cross slides. Preloaded ball screws for carriage motions.
- Fully synchronized direct drive in both headstocks by variable displacement hydraulic motors.
- Automatic loading and unloading of workpiece by means of elevator built into bed of machine.
- Automatic corrective steering action of tracing systems initiated by stylus deflection.
- Hardened and ground ways on bed and cross slides.
- Anti-friction mounting of template carriers allows positive alignment of templates at all times.
- Automatic oil mist lubrication system on all carriage movements. System is energized when hydraulic system is in operation.
- Readily adaptable for N/C.

*For Complete Information Send For Brochure with Specifications*

**SIMMONS**

MACHINE TOOL CORPORATION

Main Office and Plant: 1705 N. Broadway, Albany, N. Y. 12201
Telephone: (518) 462-5431 Cable: SIMMONS-ALBANY
New York Office: 767 Fifth Avenue, New York, N. Y. 10022
Telephone: (212) 838-0842 Cable: SIMTOOLCOR-NEW YORK

Circle 20 on coupon page 52

# Control low locomotive speeds to 1/10 mph

The WABCO Slow Speed Locomotive Regulation System controls slow speeds *precisely* to within 0.1 mph of the selected speed. Typically, it will save 20 minutes when humping a 150 car train. It reduces pin binds. And it reduces trimming of misrouted cars.

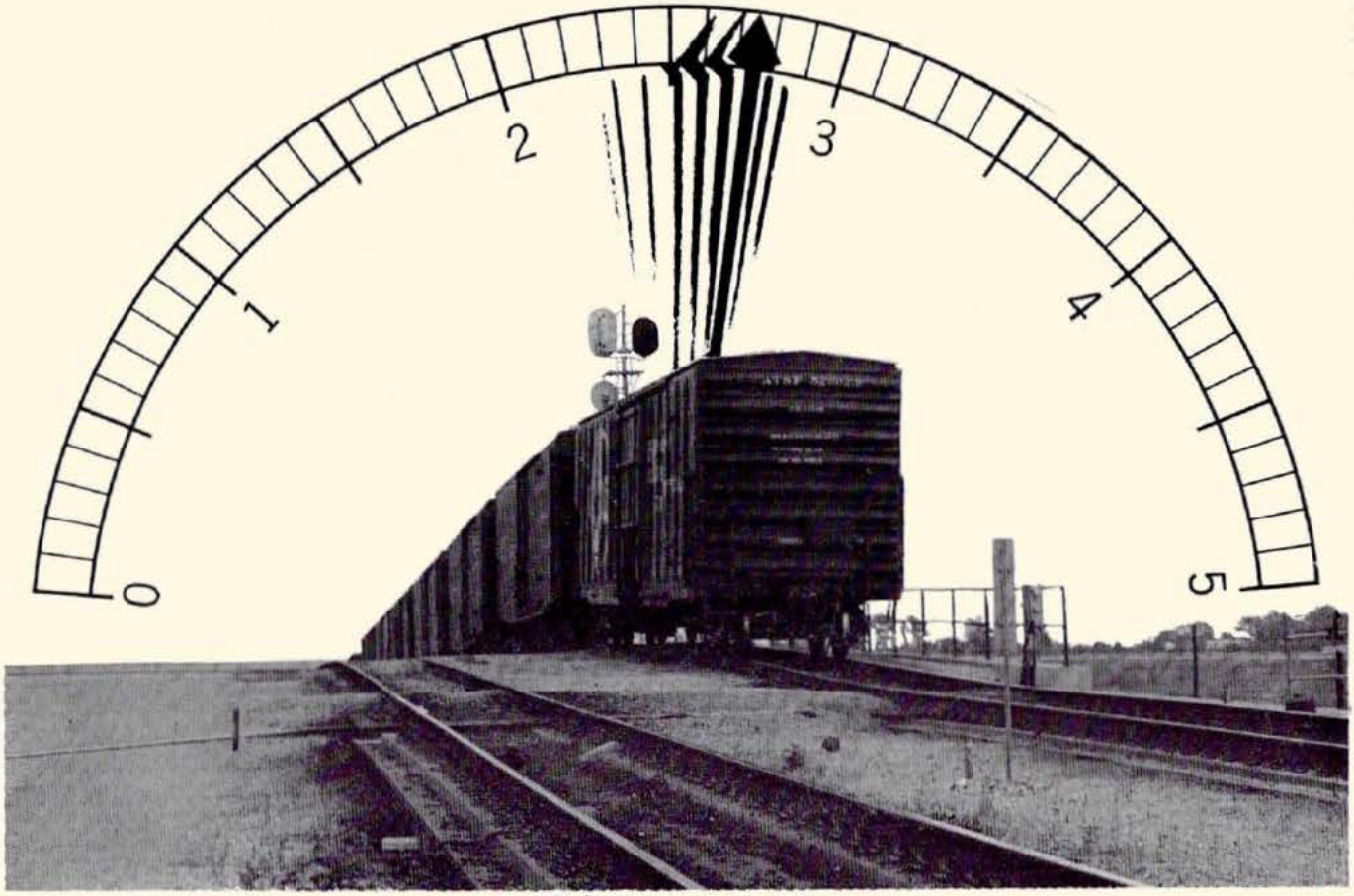
**Varied applications.** Use this WABCO System for humping speed control, flood loading, on-the-fly loading.

**Precision speedometer.** Reads to within 0.1 mph.

**An important building block** in total terminal control.

WABCO, Signal & Communications Division, Pittsburgh, Pa. 15218

WABCO




Circle 19 on coupon page 52

# Your 5 year old Timken® "AP" bearing still has 2 years to go on a guarantee it didn't have when you bought it.

# PARTS REPLACEMENT AGREEMENT

THIS AGREEMENT is between THE TIMKEN ROLLER BEARING COMPANY (hereinafter called the "Company") and _____ (hereinafter called the "Customer"), and is made effective _____ 19___.

In consideration of the purchase by the Customer, on or after the effective date of this Agreement, of Timken® "AP" bearings, for use on railroad freight car applications, the Company hereby agrees as follows:

1. On any Timken "AP" bearing assembly purchased by the Customer during the term of this Agreement for use on freight car applications, the Company will replace or repair, free of charge other than any applicable inspection or service charge otherwise payable and Customer's portion of transportation, any of the parts specified in paragraph 5 below which, within 84 months of the original date of manufacture etched or stamped on the bearing, are found to be in such condition as to require replacement or repair to comply with the standards set forth in the Roller Bearing Manual of the Association of American Railroads as of January 1, 1969. If cup or cone surfaces show evidence of Brinell or fatigue due to normal wear or loading, to the extent that they are not suitable for continued service under standards set forth in the Roller Bearing Manual, the inspection charge otherwise payable will also be waived. If the Roller Bearing Manual should require, or the Customer should specify, that certain parts of the bearing assembly be replaced when the bearing is reassembled, even though such parts are in good condition, the Customer will be charged for the replacement of such parts.
2. The provisions of paragraph 1 above shall also apply, subject only to the 84 months' limitation, to any Timken "AP" bearings purchased by the Customer prior to the effective date of this Agreement.
3. To qualify for replacement of parts under this Agreement, the following requirements must be met, to the best of the knowledge and belief of the Customer and to the satisfaction of the Company:
   a. The condition requiring replacement must be attributable to the quality of material or workmanship in the manufacture of the bearing, and must not be due to damage from derailment, fire, immersion in or exposure to water.
   b. The complete bearing assembly (less axle end cap assembly) including all parts as removed from the axle for inspection must be forwarded to the Company, f.o.b. Columbus, Ohio, fully assembled, and with suitable packaging and/or blocking to prevent damage in shipment and handling, within 84 months of the original date of manufacture, as specified above, with identification of the Customer by or for whom the bearing is being forwarded.
   c. The bearing assembly must have been in use on a freight car operated and maintained in accordance with loading and other rules and standards of the Association of American Railroads for cars in interchange service.
   d. There must not have been any modifications or alterations of the bearing assembly, unless authorized in writing by the Company, nor any improper repairs or any substitution in the bearing assembly of bearing components made by another manufacturer.
4. Following inspection and repair or replacement of parts in accordance with this Agreement, the complete bearing assembly (less axle end cap assembly) will be returned by the Company to the Customer, f.o.b. Columbus, Ohio, subject to such freight allowances as the Company may from time to time establish applicable to all customers of the same class.
5. The bearing parts which are covered by this Parts Replacement Agreement are the cones, cup, cone spacer, seals, seal wear rings, backing rings and vent fittings. Other parts of the bearing assembly - axle end cap, cap screws, locking plate and lubricant fitting - are covered by the warranty referred to in paragraph 6 below.
6. This Parts Replacement Agreement supplements the warranty set forth in the "Conditions of Acknowledgment and Acceptance of your Purchase Order," under which the bearings were originally sold by the Company to the Customer.
7. Except as provided in paragraph 3d above, this Parts Replacement Agreement will apply where the condition of parts requiring replacement or repair has been found upon inspection either by the Company, or by the Customer or any other person for the Customer prior to the forwarding of the complete bearing assembly to the Company in accordance with paragraph 3b above.
8. In the event of any dispute concerning the qualification of a bearing for replacement of parts under this Agreement, the necessity for replacement or repair of particular parts, or any other question concerning the application of this Agreement, the decision of the Company will be final.
9. This Agreement is for a term of _____ months from and after the effective date, and may be extended for successive periods of twelve (12) months by notice in writing from the Company to the Customer. Following the termination of this Agreement, any bearing assembly to which this Agreement became applicable during its initial term or any extension will continue to be eligible for replacement of parts in accordance with the provisions hereof.

IN WITNESS WHEREOF, the Company has executed and delivered this Agreement to the Customer as of the effective date specified above.

APPROVED:

THE TIMKEN ROLLER BEARING COMPANY

_____
General Manager - Sales or Assistant General Manager - Sales
Railroad Division
The Timken Roller Bearing Company

By _____
District Manager, Railroad Division

Only the Timken® "AP" bearing 7-year Parts Replacement Agreement cuts maintenance cost two ways. And has been doing it since April 1.

First, we'll replace or repair any part found unserviceable due to normal wear or loading up to 7 years from date of bearing manufacture.

Second, the same service applies to bearings you *now* operate. Even to "AP" bearings manufactured 7 years ago.

Which means you save on normal operating maintenance on every Timken "AP" bearing you purchased since 1962—not just on the "AP" bearings you purchase today.

To find out how we can help you save, talk to your Timken Company Sales Engineer.

The Timken Roller Bearing Company, Canton, Ohio. Timken bearings sold in 133 countries. Manufacturing in Australia, Brazil, Canada, England, France, South Africa, and the U.S.A.

**Our word is as good as our bearing.**

**TIMKEN®**

REGISTERED TRADEMARK

**TAPERED ROLLER BEARINGS**

Circle 21 on coupon page 52

# MLW-Worthington diesel locomotives at work around the world

Yes, we've had a lot of experience building diesel locomotives.

MLW-Worthington has gained a wealth of knowledge in designing and manufacturing locomotives as a major supplier to Canadian railroads and other leading railways on five continents. We are proud of our locomotives that continue to work around the world delivering reliable, economical power.

But this is only part of our story, today!

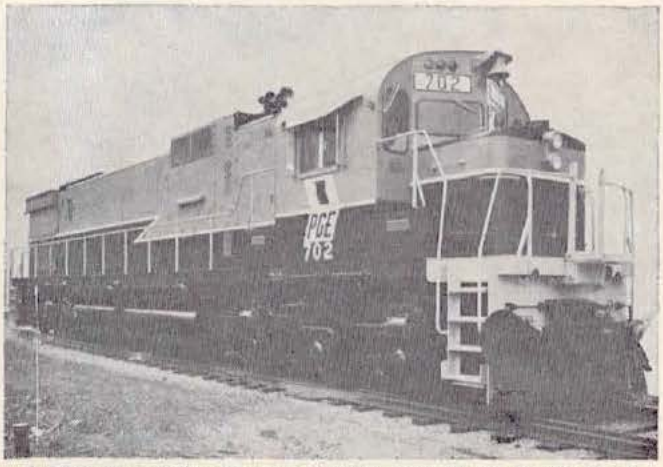
MLW-Worthington, North America's third largest locomotive manufacturer, is now designing, engineering and manufacturing new diesel locomotives to meet the increasing demands of modern railroads in Canada and around the world. This new versatile range of modern motive power runs from 1,000 hp to over 4,000 hp.

The locomotives, powered by MLW-Worthington built Alco 6, 12, 16 or 18 cylinder engines, are completely manufactured at our extensive Montreal plant and have more than 80% Canadian content. In addition a number of manufacturers in other countries are licensed to produce MLW-Worthington designed locomotives.

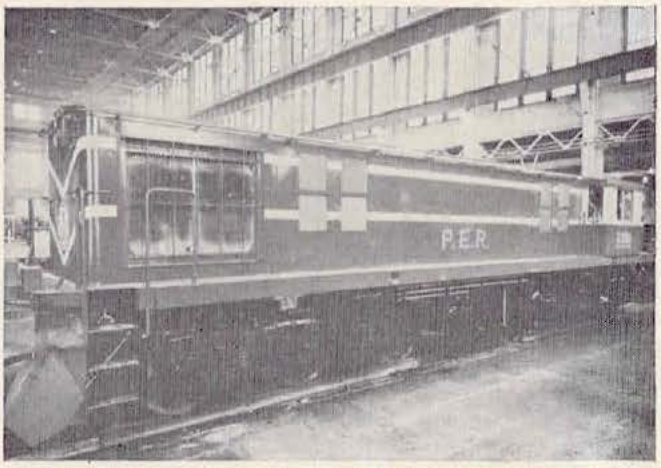
Transportation Division

**MLW-Worthington Limited**

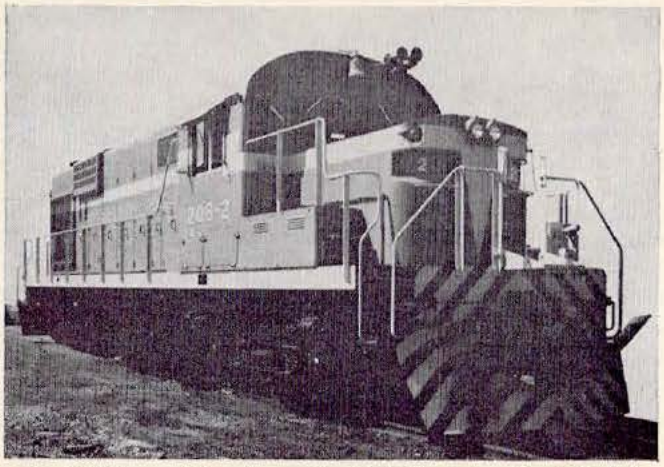
Montreal, Quebec




A 3,000 hp mainline diesel locomotive built for the Pacific Great Eastern Railway.




Pakistan Eastern Railways ordered 40 locomotives including 24 of these 1,200 hp all purpose units.



An 1,800 hp mainline locomotive built for International Nickel Co. Ltd.

One of the 2,400 hp mainline diesel locomotives built for CP Rail.

Circle 23 on coupon page 52

# PARTS REPLACEMENT AGREEMENT

**THIS AGREEMENT is between THE TIMKEN ROLLER BEARING COMPANY (hereinafter called the "Company") and _____ (hereinafter called the "Customer"), and is made effective _____ 19___.**

In consideration of the purchase by the Customer, on or after the effective date of this Agreement, of Timken® "AP" bearings, for use on railroad freight car applications, the Company hereby agrees as follows:

1. On any Timken "AP" bearing assembly purchased by the Customer during the term of this Agreement for use on freight car applications, the Company will replace or repair, free of charge other than any applicable inspection or service charge otherwise payable and Customer's portion of transportation, any of the parts specified in paragraph 5 below which, within 84 months of the original date of manufacture etched or stamped on the bearing, are found to be in such condition as to require replacement or repair to comply with the standards set forth in the Roller Bearing Manual of the Association of American Railroads as of January 1, 1969. If cup or cone surfaces show evidence of Brinell or fatigue due to normal wear or loading, to the extent that they are not suitable for continued service under standards set forth in the Roller Bearing Manual, the inspection charge otherwise payable will also be waived. If the Roller Bearing Manual should require, or the Customer should specify, that certain parts of the bearing assembly be replaced when the bearing is reassembled, even though such parts are in good condition, the Customer will be charged for the replacement of such parts.
2. The provisions of paragraph 1 above shall also apply, subject only to the 84 months' limitation, to any Timken "AP" bearings purchased by the Customer prior to the effective date of this Agreement.
3. To qualify for replacement of parts under this Agreement, the following requirements must be met, to the best of the knowledge and belief of the Customer and to the satisfaction of the Company:
   a. The condition requiring replacement must be attributable to the quality of material or workmanship in the manufacture of the bearing, and must not be due to damage from derailment, fire, immersion in or exposure to water.
   b. The complete bearing assembly (less axle end cap assembly) including all parts as removed from the axle for inspection must be forwarded to the Company, f.o.b. Columbus, Ohio, fully assembled, and with suitable packaging and/or blocking to prevent damage in shipment and handling, within 84 months of the original date of manufacture, as specified above, with identification of the Customer by or for whom the bearing is being forwarded.
   c. The bearing assembly must have been in use on a freight car operated and maintained in accordance with loading and other rules and standards of the Association of American Railroads for cars in interchange service.
   d. There must not have been any modifications or alterations of the bearing assembly, unless authorized in writing by the Company, nor any improper repairs or any substitution in the bearing assembly of bearing components made by another manufacturer.
4. Following inspection and repair or replacement of parts in accordance with this Agreement, the complete bearing assembly (less axle end cap assembly) will be returned by the Company to the Customer, f.o.b. Columbus, Ohio, subject to such freight allowances as the Company may from time to time establish applicable to all customers of the same class.
5. The bearing parts which are covered by this Parts Replacement Agreement are the cones, cup, cone spacer, seals, seal wear rings, backing rings and vent fittings. Other parts of the bearing assembly - axle end cap, cap screws, locking plate and lubricant fitting - are covered by the warranty referred to in paragraph 6 below.
6. This Parts Replacement Agreement supplements the warranty set forth in the "Conditions of Acknowledgment and Acceptance of your Purchase Order," under which the bearings were originally sold by the Company to the Customer.
7. Except as provided in paragraph 3d above, this Parts Replacement Agreement will apply where the condition of parts requiring replacement or repair has been found upon inspection either by the Company, or by the Customer or any other person for the Customer prior to the forwarding of the complete bearing assembly to the Company in accordance with paragraph 3b above.
8. In the event of any dispute concerning the qualification of a bearing for replacement of parts under this Agreement, the necessity for replacement or repair of particular parts, or any other question concerning the application of this Agreement, the decision of the Company will be final.
9. This Agreement is for a term of _____ months from and after the effective date, and may be extended for successive periods of twelve (12) months by notice in writing from the Company to the Customer. Following the termination of this Agreement, any bearing assembly to which this Agreement became applicable during its initial term or any extension will continue to be eligible for replacement of parts in accordance with the provisions hereof.

IN WITNESS WHEREOF, the Company has executed and delivered this Agreement to the Customer as of the effective date specified above.

APPROVED:

_____
General Manager - Sales or Assistant General Manager - Sales
Railroad Division
The Timken Roller Bearing Company

THE TIMKEN ROLLER BEARING COMPANY

By _____
District Manager, Railroad Division

Only the Timken® "AP" bearing 7-year Parts Replacement Agreement cuts maintenance cost two ways. And has been doing it since April 1.

First, we'll replace or repair any part found unserviceable due to normal wear or loading up to 7 years from date of bearing manufacture.

Second, the same service applies to bearings you *now* operate. Even to "AP" bearings manufactured 7 years ago.

Which means you save on normal operating maintenance on every Timken "AP" bearing you purchased since 1962—not just on the "AP" bearings you purchase today.

To find out how we can help you save, talk to your Timken Company Sales Engineer.

The Timken Roller Bearing Company, Canton, Ohio. Timken bearings sold in 133 countries. Manufacturing in Australia, Brazil, Canada, England, France, South Africa, and the U.S.A.

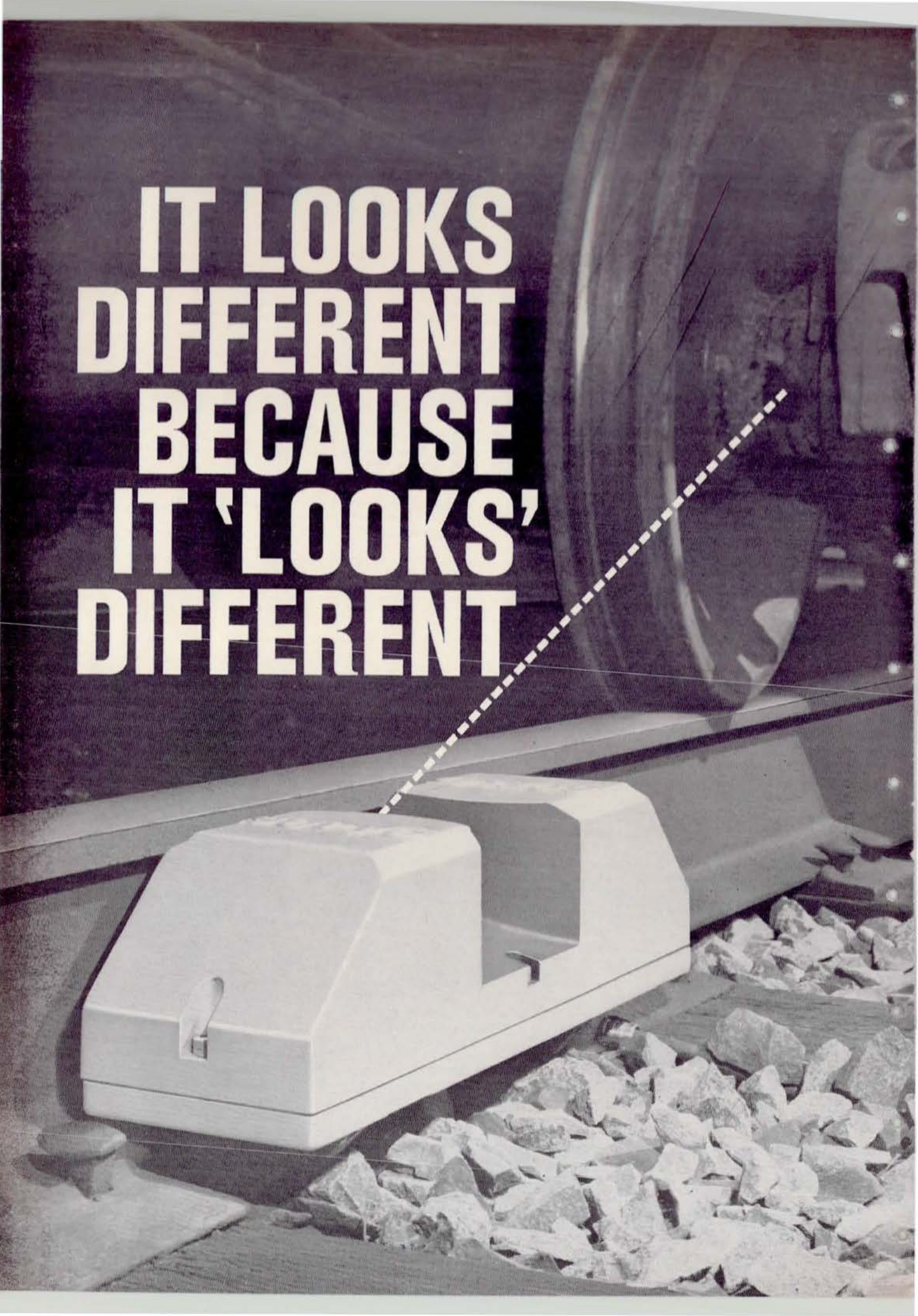
**Our word is as good as our bearing.**

**TIMKEN®**

REGISTERED TRADEMARK

**TAPERED ROLLER BEARINGS**

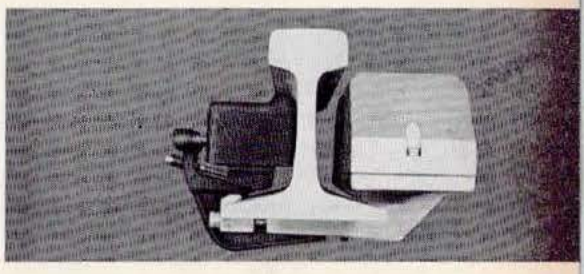
Circle 21 on coupon page 52


IT LOOKS
DIFFERENT
BECAUSE
IT 'LOOKS'
DIFFERENT

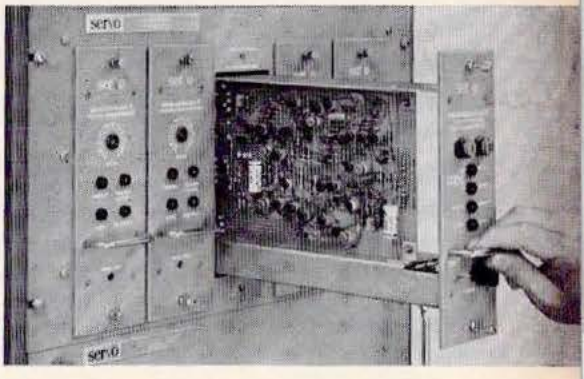
# Announcing the new Model 8808 Servosafe® Hot Box Detective™ with RAIL-MOUNTED SCANNERS PATENTED

**CLOSE-IN TARGET "LOOK" FOR UNIFORMITY AND ACCURACY**
The Model 8808's rail-mounted scanner looks vertically at the bearing journal *behind* the truck frame. This provides a clearer, more uniform scan of the journal, unaffected by truck lateral motion, wheel size variations, or obstructions such as springs and equalizers. The distance between the scanner and journal target is significantly shorter, resulting in increased detection sensitivity and accuracy under all operating conditions including extreme weather. The system is completely compatible with all types of roller and friction bearing journals, regardless of frame or housing configurations.

**NOT AFFECTED BY RAIL OR BALLAST CONDITIONS**
The scanners and gating transducers are securely clamped to the rail. Drilling is not required. Target-scanning accuracy is not affected by rail pumping, running, or lateral movement since there is no relative motion between the scanner and the wheel. There is no requirement for special roadbed stability or special rail anchoring. Alignment is permanently fixed, eliminating repeated re-alignments and adjustments.



**ADVANCED DESIGN SOLID-STATE ELECTRONICS**
Finest quality semiconductors and plug-in electronic modules assure maximum reliability and service life. A unique signal processing circuit and precise, instantaneous gating offer greater accuracy of detection and fast system response, independent of train direction and speeds from 5 to 150 mph. Smaller differential signals and higher system gain allow earlier detection of overheated journals. The fast-acting detection system, together with the behind-the-truck-frame scan, excludes spurious heat sources that could cause false indications. Power requirements are considerably less—battery power can be used for standby operation. Panel space has been reduced by the compactly packaged, plug-in modules.




**REDUCED INSTALLATION AND MAINTENANCE COSTS**
Installation costs are appreciably reduced by the elimination of concrete foundations, special ties and roadbed preparation. The scanner housing's aerodynamic design prevents the accumulation of foreign matter, thus minimizing the need for optical system cleaning and maintenance trips. If relocation is ever required, the scanner can be removed from the rail quickly and easily, without special tools or equipment.

***See the Servo 8808 at the AAR Show Montreal, Sept. 16-18***

If you're looking for the latest in hot box detection equipment that can increase safety and efficiency while reducing operating costs, take a look at the Model 8808, the system with the new "look" that's been field-tested for more than two years.
Ask for our Tech Data Publication 2020.

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Circle 22 on coupon page 52

# MLW-Worthington diesel locomotives at work around the world

Yes, we've had a lot of experience building diesel locomotives.

MLW-Worthington has gained a wealth of knowledge in designing and manufacturing locomotives as a major supplier to Canadian railroads and other leading railways on five continents. We are proud of our locomotives that continue to work around the world delivering reliable, economical power.

But this is only part of our story, today!

MLW-Worthington, North America's third largest locomotive manufacturer, is now designing, engineering and manufacturing new diesel locomotives to meet the increasing demands of modern railroads in Canada and around the world. This new versatile range of modern motive power runs from 1,000 hp to over 4,000 hp.

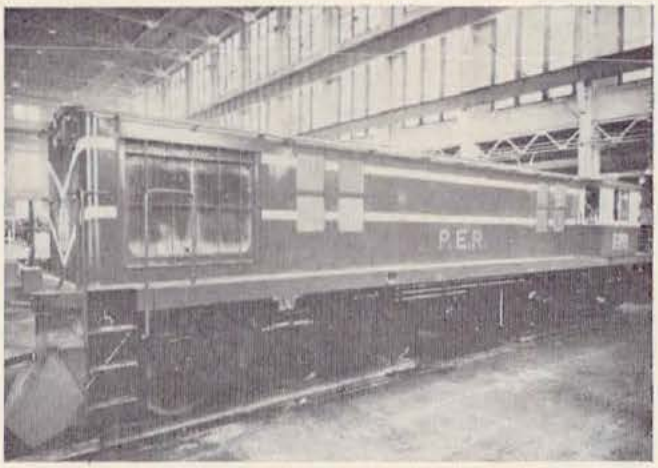
The locomotives, powered by MLW-Worthington built Alco 6, 12, 16 or 18 cylinder engines, are completely manufactured at our extensive Montreal plant and have more than 80% Canadian content. In addition a number of manufacturers in other countries are licensed to produce MLW-Worthington designed locomotives.

Transportation Division

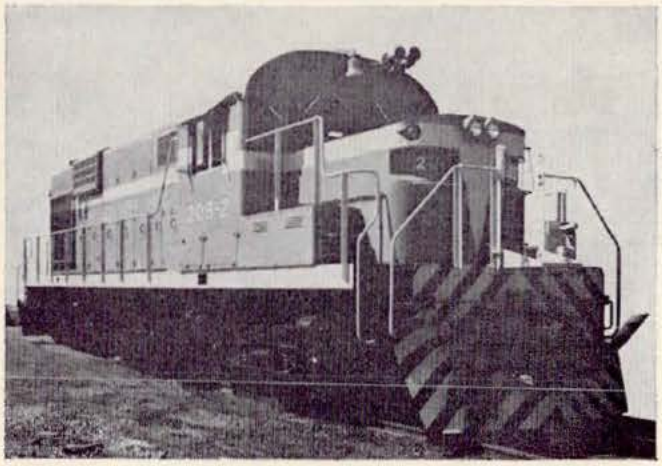
**MLW-Worthington Limited**

Montreal, Quebec

A 3,000 hp mainline diesel locomotive built for the Pacific Great Eastern Railway.




Pakistan Eastern Railways ordered 40 locomotives including 24 of these 1,200 hp all purpose units.



An 1,800 hp mainline locomotive built for International Nickel Co. Ltd.

One of the 2,400 hp mainline diesel locomotives built for CP Rail.

Circle 23 on coupon page 52

# Coordinated Associations Program

## SHERMAN HOUSE, CHICAGO

### AIR BRAKE ASSOCIATION

**Monday, September 15**

**Morning Session—10 a.m.**

**Address**—President L. A. Thomason, superintendent air brakes, Santa Fe.
**Address**—John C. Davis, vice president, Santa Fe.

**Afternoon Session—2 p.m.**

Controlling Locomotives Remotely—C. E. Hart, New York Air Brake.
Locomotive Braking Ratio Means ???—D. B. Yates, Pullman-Standard.
Recommendations for Air Brake Standardizations on Interchange Motive power.

**Tuesday, September 16**

**Morning Session—9 a.m.**

Locomotive and Train Simulation—H. E. Woodhouse, Link Group.
Computerized Approach to Problems of Train Speed, Stop Distance and Signal Spacing—R. A. Stane, AT&SF.

**Afternoon Session—2 p.m.**

Effective Brake Pressure for Brake Performance—C. D. Wright, WABCO.
A Brake System for Multiple-Unit and Rapid Transit Cars—C. Dunne, Manhattan Air Brake Club.
Automatic Control and Integrated Blending of Dynamic Brake and Locomotive Independent Brake—Canadian Air Brake Club.
Why and How to Stop Trains—E. R. Tyler, president, St. Louis A.B. Club.

**Wednesday, September 17**

**Morning Session—9 a.m.**

Questions and Answers.

### CAR DEPARTMENT OFFICERS ASSOCIATION

**Monday, September 15**

**Morning Session—10 a.m.**

**Address**—President W. H. Keleher, chief mechanical officer, Merchants Despatch Transportation.
Report—AAR Loading Rules. Chairman: E. S. Spafford, C&NW.
**Address**—H. C. Beaman, Jr., president, Merchants Despatch Trans.

**Afternoon Session—2 p.m.**

Report—TOFC/COFC. Chairman: H. O. Ludwig, Reading.
Report—Repair Track and Train Yard Operation. D. F. Gilgard, C&NW.

**Tuesday, September 16**

**Morning Session—9 a.m.**

Report—Freight Car Equipment. Chairman: G. L. Allen, Santa Fe.
Report—Wheels, Axles and Wheel Shop Practices. M. W. Puett, general foreman wheel shop, Santa Fe.
Report—Protective Coating. J. F. Hutson, chemist, Southern.

**Afternoon Session—2 p.m.**

Report—Car Lubrication.—R. S. Woodson, mechanical supervisor (car), Norfolk & Western.
Comments—R. Byrne, AAR.
Report—Controlled Temperature and Atmospheric Systems. B. E. Duff, Fruit Growers Express.

**Wednesday, September 17**

**Morning Session—9 a.m.**

Report—Passenger Commuter Equipment. L. F. Penoyer, Pullman.

### LOCOMOTIVE MAINTENANCE OFFICERS ASSOCIATION

**Monday, September 15**

**Morning Session—10 a.m.**

**Address**—President T. W. Bellhouse, superintendent-mechanical department, Southern Pacific.
**Address**—D. S. Neuhart, general superintendent motive power and machinery, Union Pacific.
Report—Fuel and Lube Oil. Topic: Relation of Fuel and Lube Oil Characteristics to Locomotive Performance. Chairman: T. A. Tennyson, assistant manager-maintenance, SP.

**Afternoon Session—2 p.m.**

Report—Diesel Mechanical Maintenance Topic: Major Locomotive Maintenance Mechanical Problems—1969.

**Tuesday, September 16**

**Morning Session—9 a.m.**

Report—New Developments in Motive Power Maintenance. Topic. Application of Modern Management Techniques to Locomotive Maintenance, Chairman: J. Taggart, Canadian National.
Report—Shop Equipment. Topic: Retooling & Shop Reorganization for Improved Locomotive Production and Availability. J. H. Long, C&O/B&O.

**Afternoon Session—2 p.m.**

Report—Diesel Material Standardization and Control. Topic: Interchangeability of Locomotive Components by Builders, Suppliers, and Railroads. Chairman: J. J. Butler, Reading.
Report—Electric M-U Train Maintenance.
Topic. Design and Maintenance Requirements for New M-U Equipment.
Chairman: R. P. Turnbull, manager-mechanical engineering, Long Island.

**Wednesday, September 17**

**Morning Session—9 a.m.**

Report—Diesel Electrical Maintenance. Topic: Improved Electrical Maintenance and Testing. Chairman: R. G. Clevenger, ATSF.
Report—What's Your Problem? Chairman: J. J. Dwyer, C&O/B&O.

### RAILWAY FUEL AND OPERATING OFFICERS ASSOCIATION

**Monday, September 15**

**Morning Session—10 a.m.**

**Address**—President W. E. Copeland, regional road foreman, New Haven region, Penn Central.
**Address**—K. E. Smith, vice president and general manager, Western Region, Penn Central.
Safety—H. A. Linderer, superintendent of safety, Frisco.
New Concepts in Surface Transportation.—K. O. Anderson, General Electric, B. A. Ross, American Electric Power, R. M. Stacy, City of Philadelphia, W. C. Janssen, asst. supt., CSS&SB.

**Afternoon Session—2 p.m.**

M-U Trains—R. P. Turnbull, L.I.
Train Simulator—G. B. Adams, research engineer, Southern Pacific.
Locotrol and Its Custom Features—W. Dimmerling, Radiation, Inc.

**Tuesday, September 16**

**Morning Session—9 a.m.**

Panel Discussion—Train Handling. Chairman: M. A. Davis, chief road foreman, Delaware & Hudson.

**Afternoon Session—2 p.m.**

Status Report on High Speed Trains. E. B. Selover, PC. TurboTrain, Charles Englehardt, Sikorsky Aircraft.
Panel Discussion—Operating Rules. Chairman: L. S. Lawrence, AT&SF.

**Wednesday, September 17**

**Morning Session—9 a.m.**

Pooling of Locomotives in Interchange Service. Chairman: W. R. Foster, division superintendent, Penn Central.
Relationship of Fuel Conservation and Locomotive Operation; Operating Requirements and Locomotive Design. H. C. Eck, general supervisor locomotive operation, C&O/B&O.
Panel—On The Job Training. Chairman: R. V. Cole, Canadian National.
Push-Pull Trains. W. C. Cruickshank, assistant general road foreman, Milw.

**REAL LOCOMOTIVE DEVICES,** such as gauges, seat and control stand, are used in the cab of the Santa Fe-Link simulator.

# Locomotive simulator looks

**The simulator will add a new dimension to training programs, benefiting both safety and service, says Santa Fe president.**

A new dimension in locomotive engineer training was unveiled last week in Washington, D.C., with the Santa Fe's private showing of its new $¾-million mobile locomotive stimulator. The new training device realistically reproduces the sounds, sights and movements of train operation without actually moving over the rails.

Built for the Santa Fe by the Link Group of Singer-General Precision, Inc., the simulator will be used as an adjunct to training programs for railroad enginemen, according to John S. Reed, Santa Fe president. Among the viewers who saw the simulator while it was on display in Washington's Union Station were government and congressional leaders. Following the three-day exhibit there, the simulator was scheduled to move on to Chicago for a three-day display this week in Dearborn Station. Again, this is a private display with only government, business, railroad and railroad association officials invited.

"The simulator will add a new dimension to our training programs, with the benefits from both safety and service standpoints," Reed says. "There is, of course, no substitute for on-the-job training or on-the-spot supervision, and both will continue to play an important role in our educational programs. It will be helpful, though, to have a positive program under which all men, through simulator training, will be provided with a realistic exposure to the more important operating rules and situations."

● **How it will be used.** There are three situations where the simulator can be used. These involve:

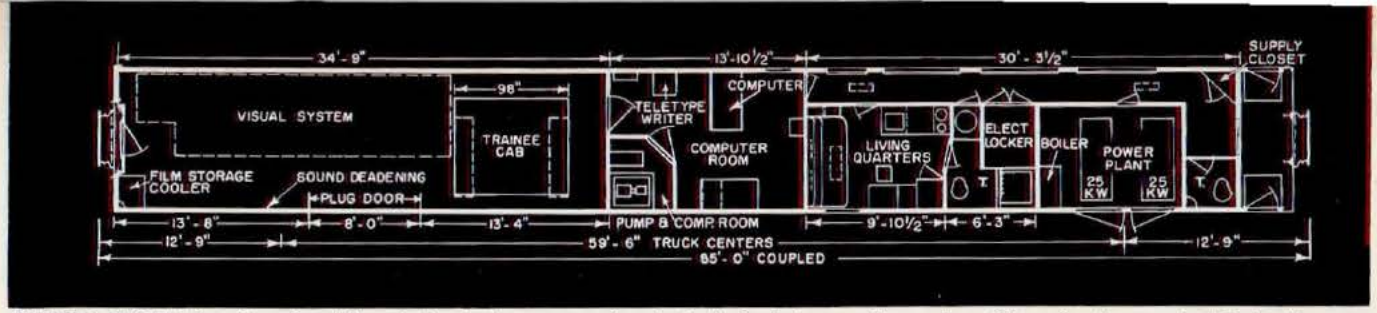
1. A program to train men with other railroad operating experience as enginemen.

2. Programs to introduce experienced enginemen to new situations, such as new combinations of power and tonnage, or to upgrade skills in a particular situation where an individual has experienced difficulty.

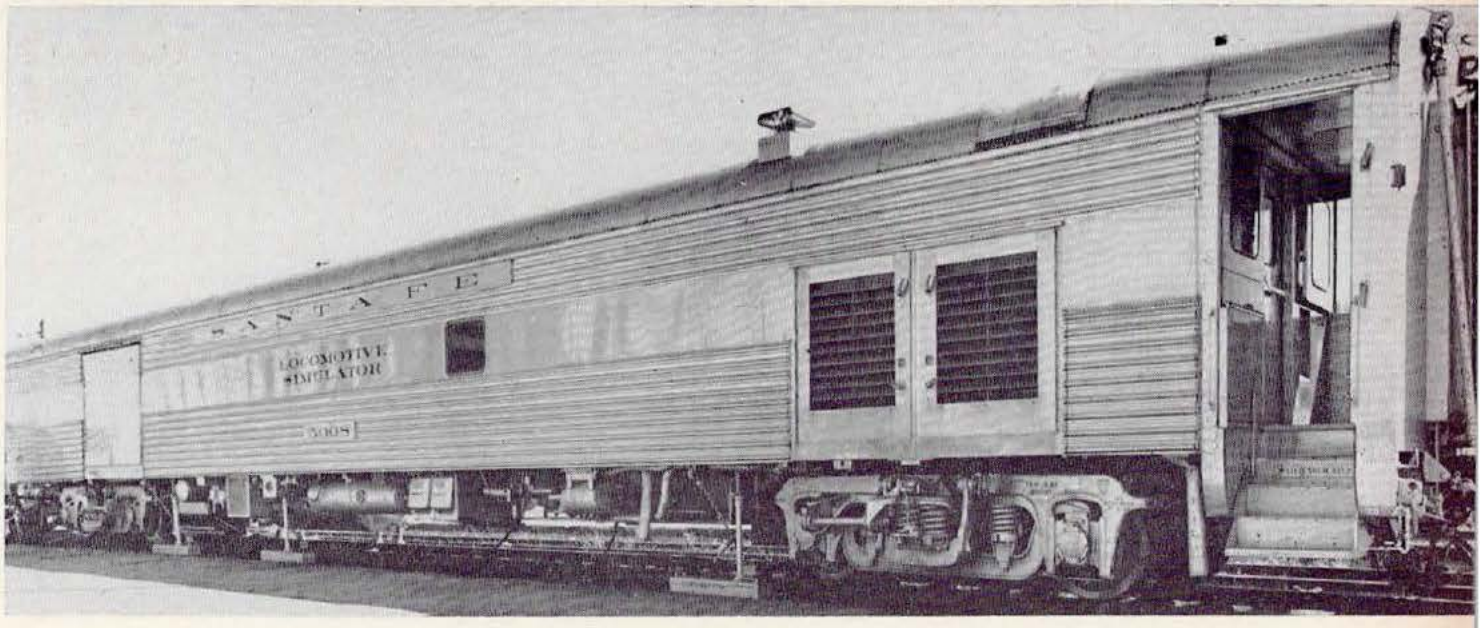
**COMPUTER CONTROL-CONSOLE** for the simulator is shown above at the left.

3. A lengthier program to train new employees as enginemen.

Initially it is anticipated by the Santa Fe that there will be a sufficient number of men now in train service who have the qualifications and desire to become enginemen. Therefore, it will




**MOBILE HOME** for the simulator (below), is a reconstructed chair-club car. Floor plan (above), shows what is in the car.




# (and acts) like the real thing

be unnecessary to recruit new employees for this purpose. These candidates may come from any craft, but most will probably be firemen or brakemen.

● **248 hours of instruction.** The proposed training course for men with previous railroad experience will include 56 hours of instruction on actual freight trains, 38 hours training in the simulator, 30 hours on switch locomotives, and the following classroom work: 4 hours of orientation, 58 hours of operating and safety rules, 18 hours of air brake and train handling, 8 hours on diesel engines and 36 hours of resume, review, examination and assignment. Altogether, the total instruction time contemplated is 248 hours.

When a man completes the course satisfactorily, he will be qualified for assignment as a locomotive engineer. Following assignment, however, he will continue to receive on-the-job training and supervision, to be certain he has absorbed his training satisfactorily and is fully capable of performing his function in a safe, productive manner.

"The opportunity for an engineman to handle on a simulator a 10,000-ton train down a 3% grade, before actually being faced with the real-life responsibility to do so, should be a reassuring experience," says Reed. "We have the capability to add to the training program unique situations like this or others that may present themselves in the future, and I believe use of the simulator will be popular with our employees."

● **Two years of studies.** The Santa Fe signed the simulator contract with Link in October 1968, following almost two years of investigations of similar types of training devices. Reed's interest in simulators goes back many years beyond the contract-signing to World War II when—as he stated in a speech before the Railway Systems and Management Association in March 1967—he and fellow Navy personnel learned some unforgettable survival lessons in crude, but effective, simulators.

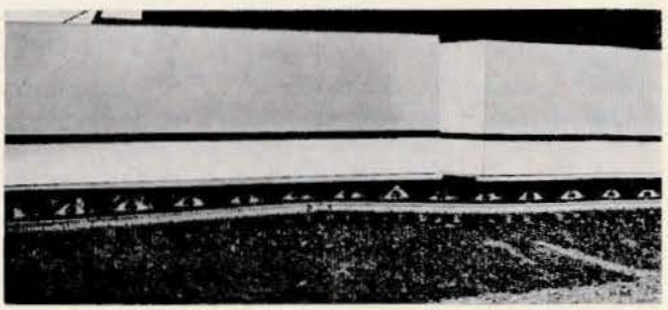
In the 1967 speech he noted that the Santa Fe at the time was reviewing the traditional railway learning process—"education by osmosis" over three- or four-year periods wherein a new employee learned primarily from association with experienced personnel. The quality of this training was directly related to the skills and habits of the enginemen with whom the individual worked, and bad working habits were sometimes passed on along with the good.

Reed also pointed out that a locomotive simulator would be helpful in improving performance in two areas—train handling, or driving, and train operating. The driving function takes in dexterity and experience in manipulating the throttle, brake valve, and other controls to produce a smooth, safe handling with avoidance of harsh slack action and resultant possibility of damage to lading. The train operating function, on the other hand, deals with the point-to-point operation of trains in accordance with procedures prescribed by the book of rules, timetable, and other regulations.

He also told RSMA members that a simulator could be used to acquaint enginemen with technical knowledge of the locomotive, but added that there seemed to be little need for this function.

● **From blueprint to reality.** Once the contract was announced last October, neither the Santa Fe nor Link wasted any time in attacking the new

*(Continued on page 64)*



**ROUGH TRACK** is no particular problem in coax al design. Knee-action wheel assemblies stay right with the rail.

**BOTTOMS-UP SHOT** shows how main deck and containers on the coaxial train follow a relatively straight line.

# Tomorrow's fast freight?

**The "coaxial train," now only a scale model, would offer high speed and a smooth ride.**

You could be looking at the next breakthrough in high-speed railroading.

This is Santa Fe's "coaxial train." It exists today only in scale-model form. But the concept—and the performance of the model—have already generated considerable interest, in quiet talks which Santa Fe has had with various equipment builders.

Santa Fe's intent was to create a design for a container train. But conventional piggyback trailers could be handled with only a slight drop in operational efficiency. And it's obvious that the high-speed/smooth-ride factors built into the freight-train design are also key factors in development of advanced passenger systems.

Construction of a coaxial train would not be cheap. But it would probably be considerably less expensive than the alternative methods available to upgrade rail operations for higher speeds and heavier loads. And even in comparing equipment costs alone, the coaxial design might not come off badly, if cost of both cars and motive power in a conventional train is considered.

● **Trends—and alternatives.** Larry Cena, Santa Fe's vice president-operations, sums up the problem: Trends in railroading have been and will continue to be toward improved service and improved economy of transportation. These trends mean higher speeds; they have meant a swing to longer cars capable of hauling heavier loads.

The question is: How much longer will this approach work? Cena explains: "The initial idea for the coaxial train dates back to our experiments leading to inauguration of 'Super C'—the fastest freight train in the world. Beyond that, the year-and-a-half during which we have successfully operated 'Super C' have given us a unique opportunity to research the speed potential with current standards of roadbed and types of rolling stock."

Emphasis on changes in rolling stock, rather than on roadbed, seemed proper: "These studies and experiments convinced us that the greatest immediate potential for future substantial increases in performance, from both practical and financial standpoints, was in designing a new basic freight vehicle that could operate over present standards of roadbed safely at high speeds with heavy loads," Cena says. (He adds: "This does not suggest that we are disinterested in improving the design of roadbed, and we are now involved in conducting tests in that area, too.")

Tests with the coaxial train model, Santa Fe says, have not permitted R&D engineers to pinpoint an exact potential train-speed on existing track. But "indications are that it will be well in excess of 100 mph."

● **Targets were set up:** Santa Fe gave its engineers eight guidelines for development of this "new basic freight vehicle." The design had to provide:

—A lowered center of gravity.

—Minimum wind resistance.

—An alternative to standard, rigid axles, to cut down on rail- and wheel-wear on curves.

—Improved weight distribution.

—Modular construction, to permit maintenance forces to make quick repairs or parts replacement.

—A smoother ride, through elimination of slack action.

—Power distribution evenly throughout the train, for smooth acceleration.

—A redesigned braking system.

● **Caterpillar and platypus.** Santa Fe designers produced a "train" that looks something like a caterpillar—with a head-end that resembles the beak of a platypus, in its aerodynamic styling. Diesel-power generators at the head-end will provide the electric power, which would then be distributed to small motors powering each individual wheel in the train.

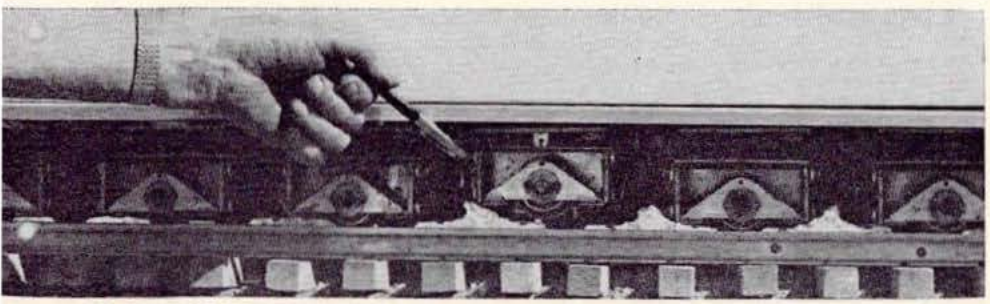
If a coaxial train is built, there would have to be wholesale changes in the dictionary of freight-car parts. The design does not incorporate, for example, such common devices as brake shoes, couplers, draft gear, slack adjusters or (in the traditional sense) truck side frames and bolsters. The coaxial train does not even have "cars," in the traditional sense.

Coaxial trains would be built to pre-determined lengths. Each train would have one continuous center sill —which would flex around curves and still have ample strength to support heavy loads. (Santa Fe points out that the feasibility of the laterally-flexible center sill has been proved in operation of welded-rail trains, in which 1,440-foot rail strings bend around curves and create no derailment problem.)

● **Below the deck . . .** The main deck of the coaxial train would be just 24 inches above top of rail. And the designers have packed a lot of hardware into that two-foot space.

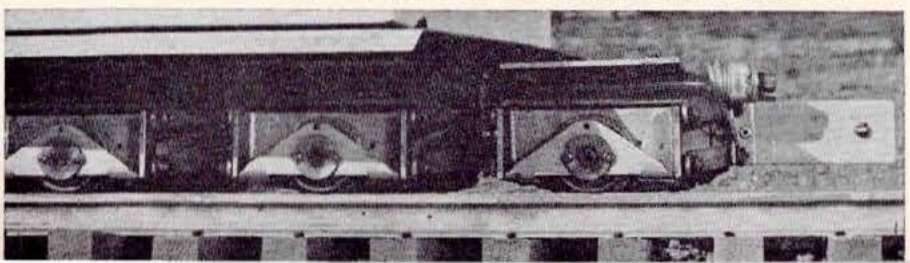
First, there are the modular wheel assemblies, using wheels approximately 16 inches in diameter. Assemblies are spaced about four feet apart—so a 60-foot section of the train, roughly comparable to a box-car length, would have 15 wheels on each side.

A wheel deck, fastened to the flexible center beam, is provided for each opposing pair of wheels. Between the wheel deck and the individual wheel-suspension assemblies are plastic tubes which run longitudinally on each side of the train. These tubes were added



**IN CASE OF MALFUNCTION** of coaxial-train wheel assembly, offending assembly can be quickly jacked up and locked—and the train keeps moving without delays.

**PLASTIC TUBES** inserted between wheel decks and knee-action assemblies provide equal load distribution to all wheels, for smoother operation at high speeds.



LUTHER MILLER

# AS THE EDITOR SEES IT

**HOW RICH ARE THE RAILROADS?** Do they really need to rattle their tin cups on Capitol Hill (as one late public servant put it)? Or are they, in fact, far better off than they care to let on, throwing an occasional crying jag to win sympathy and influence Congressmen? The latter opinion is sufficiently widely held to call for periodic rebuttal. The issuance of the AAR's semi-annual report on the state of the industry provides as good (and as gloomy) an occasion as any to do so.

**ON THE SURFACE,** things look good. Traffic is holding to a respectable, if unsensational, level—and two rate increases have increased the dollar take. Gross operating revenues for the first half were close to $5.7 billion—an increase of more than 5% over the comparable 1968 period. In the present economy, not many multi-billion-dollar industries can make that statement.

**BUT READ THE SMALL PRINT.** While revenues were rising by 5%, expenses were rising at almost exactly the same rate. And the tax bill—a billion-dollar-a-year item for railroads—was rising by 10.7%.

**WHAT DID THIS MEAN FOR THE RAILROADS?** It meant that 20 of the 74 reporting Class I railroads operated in the red for the first half (13 in the East, six in the West, one in the South.) It meant that for railroads as a whole, the rate of return on investment (the ratio of net operating income to net investment of $27.7 billion) sank to 2.44% for the 12-month period ended June 30—down from the 2.56% in the corresponding year-earlier period. Not many multi-billion-dollar industries can make that statement. Or could afford to, for very long.

**A CRYING JAG** is not what we intend to set off by giving this prominence to a set of statistics that we wish we'd never seen. A sober look at the financial facts is all we ask for. Bills now before Congress aren't going to solve the railroads' financial problems; but sensible action on, for example, Senator Hartke's bill to relieve railroads of the intolerable burden of subsidizing "public service" trains which cannot even meet their operating costs; and a realistic appraisal of the railroads' unique capital-investment problems, followed by appropriate legislative action—these will help. Another general rate increase is almost inevitable. What Congress does, on the these and other measures, can help determine just how big that increase will have to be.

to the design after tests with the model indicated that the load must be equally distributed to all wheels if the train is to meet the demands for speed and smoothness-of-ride. Later tests indicated that the model can ride safely over a pencil-size object placed on the track—and, Santa Fe says, that's equivalent to taking an actual train over a two-inch-high obstruction.

Above the wheel decks is the main deck. This can be varied in length, but in a prototype it would probably be designed to handle a 40-foot container.

Support between the wheel decks and the main deck is provided by rollers, spaced four to each wheel deck. The main deck is fastened to the flexible center beam at only two points, approximately one-fourth of the deck-length in from each end. Two-point fastening and the angling of the support rollers toward the two points permits the deck to "float" around curves, Santa Fe says.

● **Wind-resistance reduced.** Tests with actual operation of "Super C" have proved to Santa Fe's satisfaction that wind resistance and turbulence are more important factors than had been believed. And in the coaxial design, wind factors are minimized in several ways—through aerodynamic styling at the head-end, through the lowered deck height which minimizes under-train turbulence, and through close spacing of main decks which minimizes turbulence between containers in high-speed operation.

Coaxial-train braking will be fully dynamic, with uniform brake application through either electrical or hydraulic systems. Says Santa Fe: "Because there are no drawbars or other coupling devices to produce slack action, braking will be smooth throughout the train, even with heavy brake application."

Santa Fe unveiled the coaxial concept for the first time last week in Washington, in conjunction with the first display of its locomotive simulator unit. Both the simulator and the coaxial train model will be exhibited this week in Chicago, coincident with the meetings of the Coordinated Associations.

What comes next? Santa Fe says it has "no firm plans to build a prototype." At the same time, Cena—who promoted the project into design and model stages—has become a strong believer in the validity of the concept. Equipment builders are known to be interested. There is a suspicion that this is the kind of transportation-R&D effort which could attract government support.

As one Santa Fe man puts it, the coaxial train "looks too good to be left in 1/8-scale." ■

# Magor's 4750 Aluminum Covered Hopper

More capacity, more revenue, more profit. More of everything it takes to meet tomorrow's railroading demands. Magor's newly designed 4750 cubic-foot covered hopper car, only 53,500 pounds, carries approximately 5½ tons more payload than a comparable size steel car, so it moves more freight with fewer car placements. More strength in the underframe ensures more load capacity for today's high-speed trains ...holds muscle in reserve for more severe requirements in the future.

Integral side plate construction adds more resistance to combinations of external and internal loads. Cleaner hood-to-hopper sheet connection ensures more thorough clean-out. And unitized striker weldments ease repairs and replacements while more than meeting all load requirements of the AAR. Write for more specifications: **Magor Railcar Division, Fruehauf Corporation, 660 Van Houten Avenue, Clifton, New Jersey 07015.**

# the more car

Circle 60 on coupon page 52

# Innovations for tomorrow's

**Suppliers work steadily to provide railroads with new equipment, new arrangements.**

## Bulkhead flat car offers more load space (RA-1)

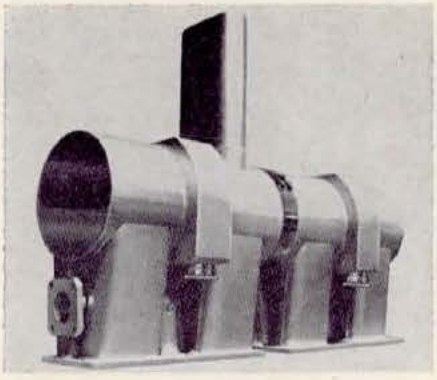
A 68-foot bulkhead flat car with 62-foot clear loading space between bulkheads is being produced for Trailer Train. Designed for hauling reinforcing bars, structural shapes, plates, lumber and building products, the car is fitted with Freight Master 15-inch end-of-car cushioning and special transverse chain tie-down assemblies which may be loosened from either side of the car. Deck has 4-inch steel risers to simplify loading and unloading with lift trucks. The 90-ton car weighs 82,500 pounds. Trucks are fitted with resilient side bearings and Motion Damping stabilizing assemblies. *Bethlehem Steel Corp.*

## Mobile unloader has role in car research (RA-2)

A Pneu-Pac mobile unloading device is used at the ACF Technical Center at St. Charles, Mo., to develop the material-handling characteristics of new bulk-materials cars. Characteristics of over 500 commodities moved in covered hopper cars have been investigated by ACF. Because the Pneu-Pac can be used wherever pneumatic systems take solids from cars and transport them to storage or process, ACF did its best to simulate field conditions with installation of its own pneumatic handling system. A 100-hp electric motor drives Pneu-Pac's two rotary blowers which operate in parallel to produce a large volume of air flow for the vacuum connections of test cars and for the pressure-side conveyor system. Blowers can also be used for developing pressures for cars discharging on this principle. Material is drawn into a filter-receiver where the solids are separated. The unloader also has a rotary-vane air lock, auxiliary

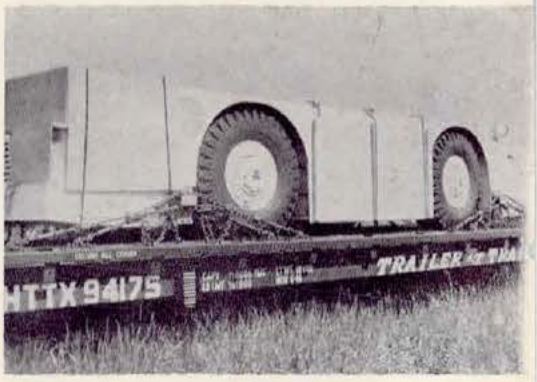
## Machining minimized with diesel wheel design (RA-3)

The D-40 diesel wheel, a 40-in. wrought steel design with a smaller hub diameter than the standard A-40, facilitates machining for use on EMD locomotives. Hub diameter tolerance is plus or minus 1/8 in. AAR specification establishes a minimum of 2½-in. rim thickness. However, the majority of D-40 wheels are furnished with at least 2-¾-in. rims, which give increased service life. The chemistry of the steel and its forging are intended to minimize the chance of fatigue failure. *Standard Steel Division.*



## Spark arrestor for use in retrofitting (RA-4)

Locomotives being reworked for replacement with the Model 5 spark arrestor, a spark-trap manifold, must be standard EMD with or without Models 1 or 2 arrestors. All manifolds must be in fair condition without major cracks and no more than ⅜ in. out of round. Model 5 meets USFS and State of Washington requirements and is now on more than 300 locomotives. Exhaust manifolds can also be converted, or kits provided for conversions, on non-turbocharged EMD locomotives. *Farr Co.*

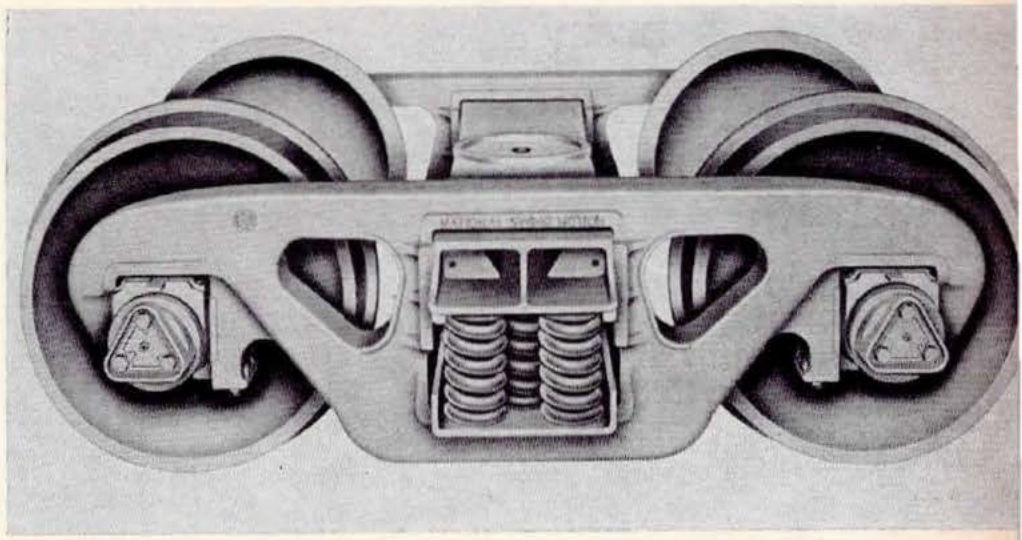



## Heavy-duty tie-downs secure jet tractor (RA-5)

The M-F heavy-duty tie-down system for load securement as applied to Trailer Train HTTX flat cars consists of alloy chains and high-strength, adjustable anchors in recessed outboard anchor channels. Some cars are also fitted with two additional channels near the center. The securement system is being utilized as 110,000-pound tractor vehicles for the Boeing 747 jumbo jet airliners are moved to airports. The first of these IH Paymovers was shipped recently to Pan American Airways. *MacLean-Fogg Lock Nut Co.*

# cars and locomotives

gages, relief valves and nose snubbers. The unit has transferred 45-lb/cu ft starch at the rate of 20 tons per hour and handled solids in cubes as large as 1-inch size. *Sprout, Waldron & Co.*

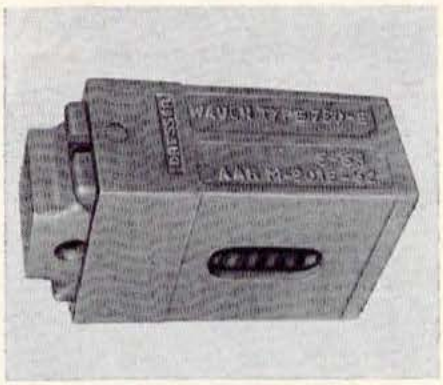


## Freight-car truck has swing motion (RA-7)

A new high-speed freight-car truck will permit train operating speeds to about 100 mph without excessive car roll or hunting. The truck, known as the Swing Motion Truck, is being produced now in the 6 x 11 size; a 6 ½ x 12 size will be available soon.

Performance of the truck is unaffected by the "coning of wheels or wheel profiles. Controlled swing of side frames and spring deflection give extra lateral. It is claimed more effective than increased-friction or special-snubber trucks. Swing Motion Truck performance is equally good with loaded or light cars.

This means that lightly loaded cars (up to about 50% load) can ride as well as fully loaded cars. *National Castings Division.*

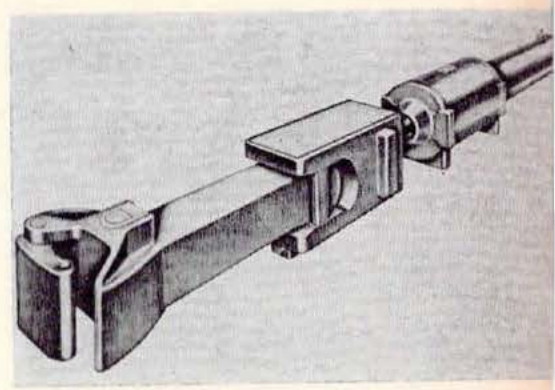


## Existing cars protected by new draft gear (RA-6)

The Waugh 730-E draft gear attains its full rated capacity within 2¾-inch travel, making it suitable for applications to most pre-1961 cars where the clearance from coupler horn to striker is 3 inches. The 730E was designed specifically to upgrade olders cars without modification to strikers or draft rigging. It fits the standard 24⅝-inch draft gear pocket, produces 51,300 foot pounds official capacity and meets AAR Specification M-901-E. Urethane load springs are used. *Dresser Transportation Equipment Division.*

## Cushion unit developed for car ends (RA-8)

The Keystone Shock Control end-of-car cushioning device incorporates the traditional Shock Control hydraulic system with accepted draft-gear yoke and stop designs which can be applied to new or rebuilt cars. The return spring, fully enclosed for long life, is incorporated in the unit's centering system; a 5000-lb precompression assures positive re-centering under extreme switching loads. Yoke casting, draft and buff stops are said to exceed AAR requirements; design prohibits any possibility of yoke coking during a buff or draft stroke. Each major part of the Keystone Model EOC may be removed separately for repair or replacement. A variety of designs utilizing the same basic parts makes possible application to different car configurations. Travel (buff and draft) in the Model EOC can be 9 and 1 in.; 10 and 0 in.; 13⅜ and 1⅝ in.; and 15 and 0 in. *Keystone Railway Equipment.*

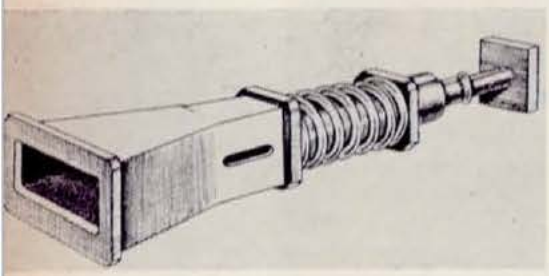


## Bearing greases meet AAR standards (RA-9)

Two roller-bearing greases which have been approved against AAR Specification M917 are now available for use on car axles. Roller-bearing grease A is for use in passenger-car anti-friction bearings which are equipped with a thrust block. Grade B is for all other types of anti-friction bearings in either passenger-car or freight-car service including the standard package units. Both grades of grease are being offered in 120-lb and 400-lb drums. *Mobil Oil Corp.*

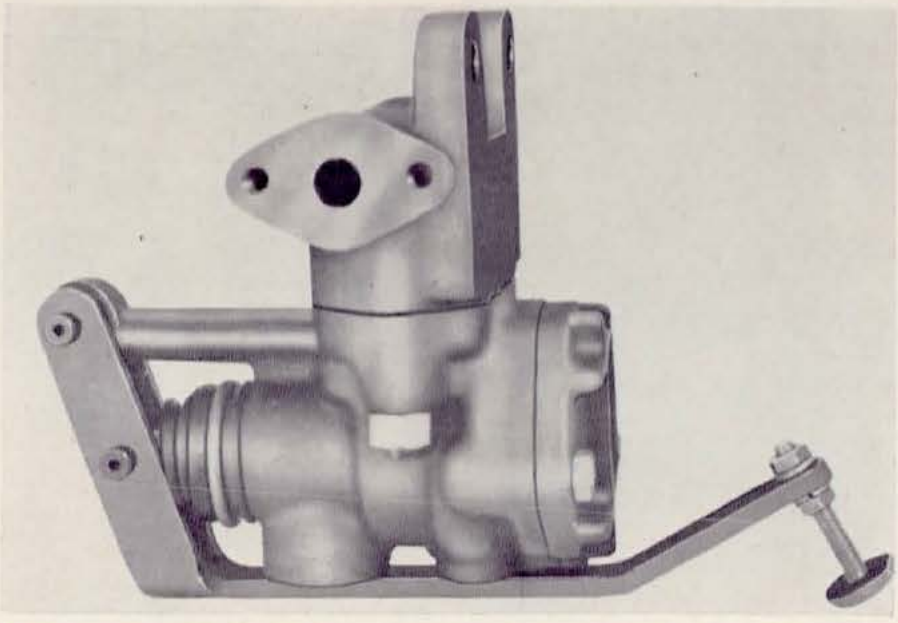
CONTINUED ON NEXT PAGE

# More mechanical products



## Car-end cushioning fits in standard sills (RA-10)

Hydro-Gear, an end-of-car cushioning unit, is a hydraulic device readily applied within standard Z-26 center sill sections when there is 12⅞ in. lateral clearance. An integral coupler connection at the cylinder end of the cushion unit normally contains the striker plate and coupler carrier. The entire unit is supported by a full-length bottom carrier plate. Hydro-Gear is a double-acting, hermetically sealed unit in which fluid metering in buff is accomplished through a metering-pin orifice which can be pre-set for desired performance. While a different orifice-controlled metering system operates in draft, all movement is hydraulically controlled throughout the full range of piston travel. The integral return spring that surrounds the cylinder is pre-compressed to return the unit to its proper neutral position. Travel of 10-, 12- or 15-in. can be provided with either zero or 1-in. draft travel. *Pullman-Standard.*

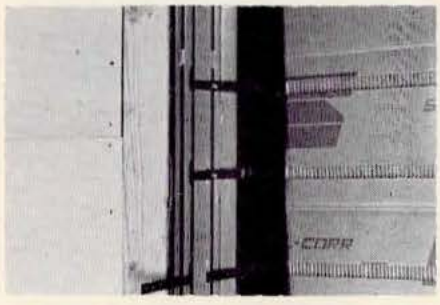


## Detector valve prevents slid flat wheels (RA-11)

The L-1 detector valve is a load-sensing device that limits the maximum brake-cylinder pressure during service and emergency brake applications on freight cars. While not a proportionate valve for empty and load applications, it is said to effectively protect against excessive braking and the possible result of slid flat wheels. The valve senses an empty car by measuring the relationship of the carbody to the top of the truck side frame. When an empty-car condition exists, the valve will cut in a Detector Volume when the brake-cylinder pressure builds up to a specified limit. The Detector Volume combined with the Brake Cylinder Volume will, therefore, maintain a maximum full service or emergency brake pressure accordingly. Braking effort produced throughout the full range of reductions is not affected by this volume. When car is loaded, Detector Volume is not cut in and normal braking occurs. *Westinghouse Air Brake.*

## Electronic control has slow-speed option (RA-12)

The second-generation Speed-Log features modular and electronic circuitry as part of its speed indicating and control systems. Speed signals are obtained by translating pulses generated as axle-mounted gear teeth break a permanent-magnet field surrounding the pick-up. Wheel size and tooth count are quickly set inside the Control Components where corrections are also made for wheel wear. The digital read-out Speed Indicator can be dimmed or brightened by the operator and an automatic range change gives accurate indications from 0.2 to 199 mph. Speed-Log can be supplied with a Pace Setter low-speed control for loading, unloading or humping operations where a pre-set velocity is maintained without fluctuations or overshooting by regulating locomotive main generator output. Also available is a 15,000-mile Speed and Event Recorder, shock mounted for installation, which makes a permanent record on pressure-sensitive tape. A plastic cover may be opened to record date and time on tape before each run. *Vapor Corp.*

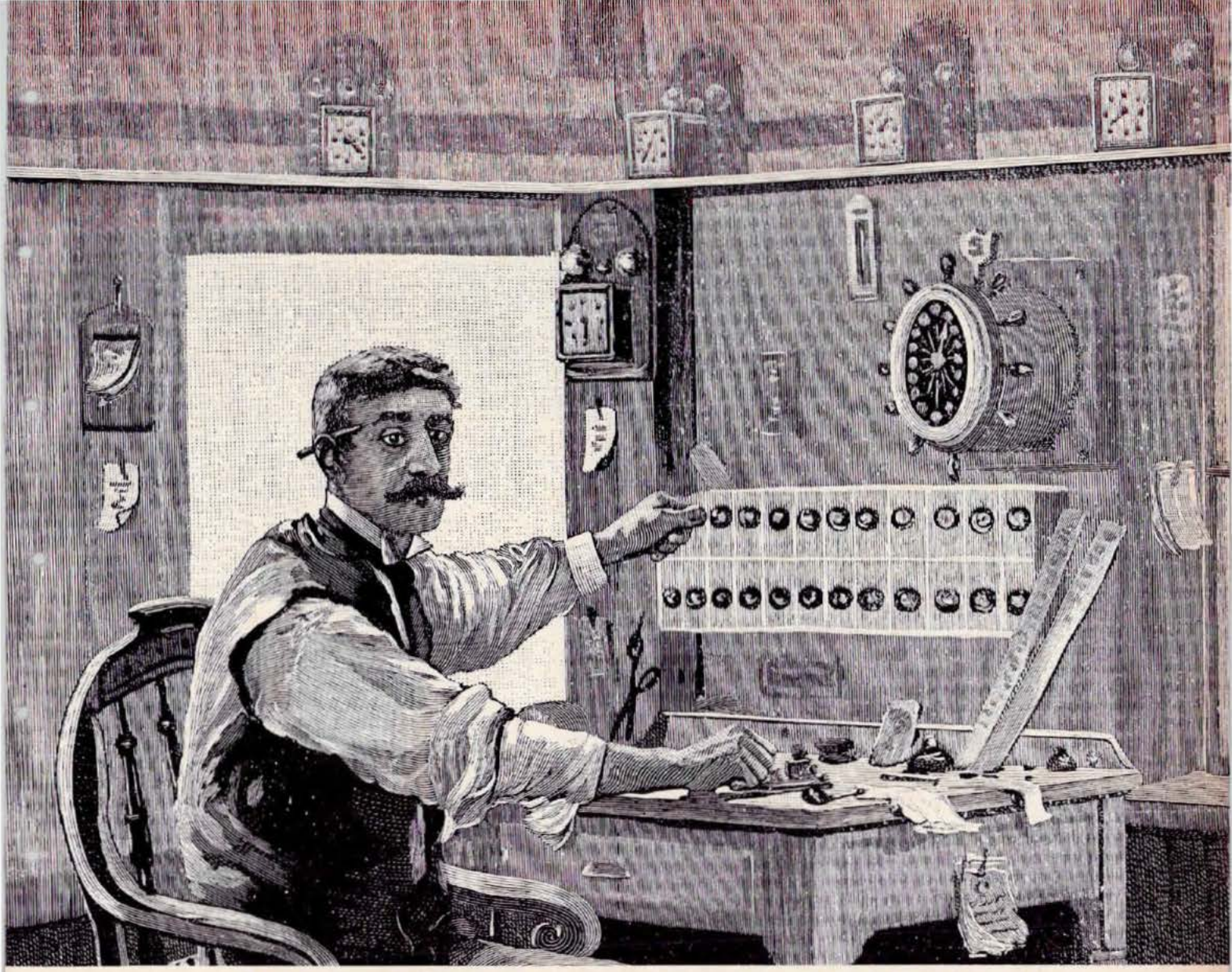


## Nailable post eliminates door-post repair (RA-13)

The POSTmaster nailable steel door post, designed to accommodate any grain door, is said to eliminate the need for shopping cars for doorpost repairs and to speed coopering, since only one nail is needed per strap. The nailer is constructed so that loads will not displace nails but they are easily removed with a nail bar. *International-Stanley.*



NEW C&S DEVELOPMENTS—PAGE 46



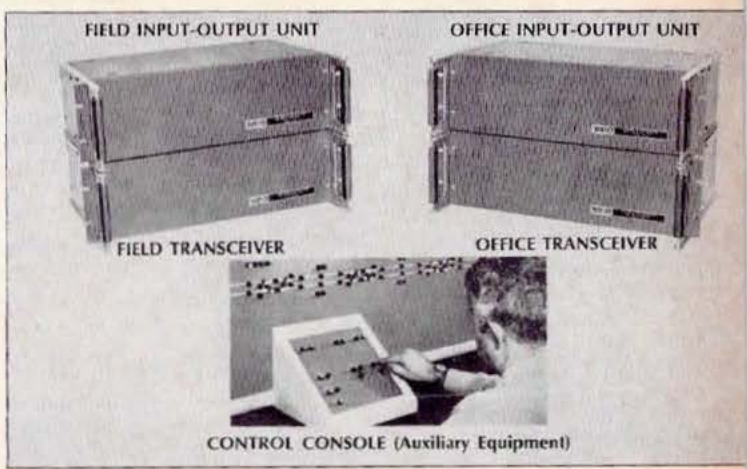
***"Land sakes! What do they expect from one man? I told 'em I need a new Servoscan remote control system to handle all this traffic!"***

SOUND familiar? The problem of efficient control of railroad operations hasn't really changed since 1888—it's just gotten worse. Today, railroad men face an ever-increasing array of new and more demanding competitive requirements—as well as the always-present factor of high labor costs.

To help railroads and rail transit operators achieve a greater degree of automation and economy, we've developed SERVOSCAN™, a new high speed solid state remote control system with self-checking reliability. SERVOSCAN is applicable to any multiple station installation that requires *control* of remote "ON-OFF" apparatus and *indication* (or monitoring) of remote "ON-OFF" contacts. Typical uses include centralized traffic control, multi-station interlockings, route check networks, classification yards, etc.

The integrated circuit design of SERVOSCAN makes it smaller, more reliable and less costly than equivalent non-vital relay equipment. A provision for manual stepping greatly simplifies field maintenance and checkout. Standard SERVOSCAN models are available to accommodate up to 64 remote field stations. A wide variety of control systems with different capacities can be easily assembled by merely stacking individual standard units.

Looking for a reliable and economical new way to improve your control system? Take a tip from our old friend, the 1888 dispatcher—take a look at SERVOSCAN. Just ask for Tech Data Publication 2006.




**SERVOSCAN™ Remote Control System** consists of four basic units: office transceiver, office input-output, field transceiver, and field input-output. Each unit measures only 5¼" x 11" x 17". Communication between office and field stations is by FSK carrier using return-to-zero coding. Auxiliary equipment is available from Servo on a custom-design basis, including control and display consoles, tape readers, solid state route check networks, manual local control panels, etc.

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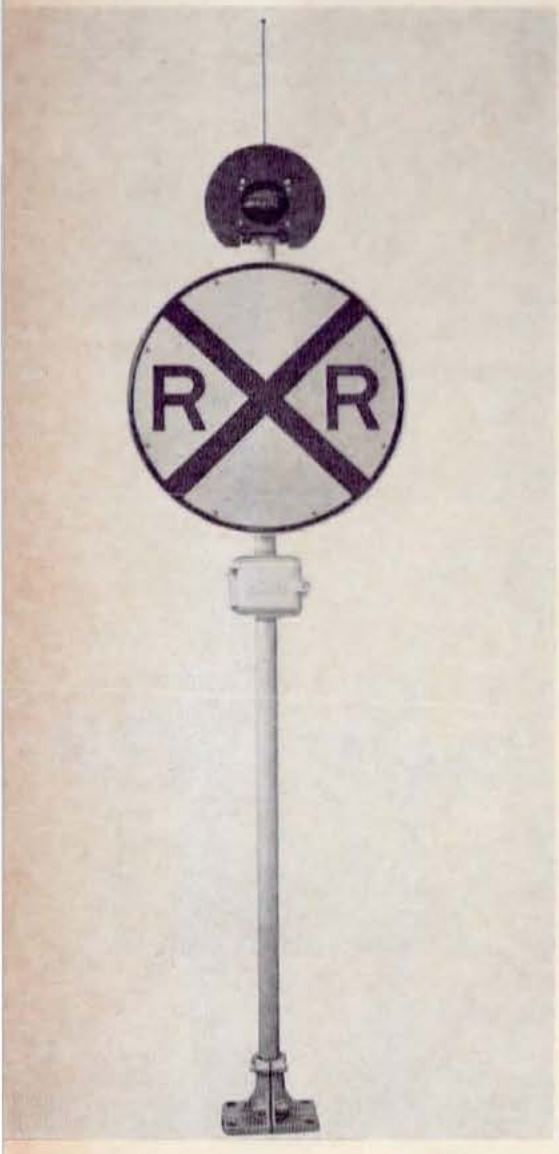
Circle 41 on coupon page 52

# New developments for C&S men




## New warning device works with existing signal (RA-14)

An operative advance warning signal for rail and highway crossings is normally dark. But as a train or engine approaches the crossing, a contact on the existing crossing control actuates the yellow flashing indicator at the advance warning signal. It then operates simultaneously with the existing signal at the crossing.

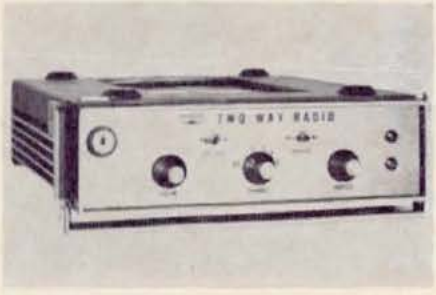
The inert sign is the national and state highway advance warning sign. The background of the advance warning signal is of yellow reflex-reflecting material with black legend. Control is achieved through a radio link, or through a carrier on the existing power lines—parallel to the highway, if available—or by direct wire or cable connection. *Railroad Accessories Corp.*

## Hotbox detector has rail-mounted scanners (RA-15)

A new hotbox detector, model 8808 features rail-mounted scanners and solid state all-electronic signal processing. The new detectors will operate with train speeds of from 5 to 150 mph. A new feature of the model 8808 detector is that the scanners are mounted on the rails and "look" at the journal bearing behind the truck frame, scanning the entire journal box in a vertical plane. No special rail anchoring is required and the scanners are clamped to the rails, eliminating any need for drilling of holes or other fastenings. Rail mounting of the scanners will provide for proper alignment between the passing journals and the scanner. The new hotbox detectors differ from previous systems in that former scanners were mounted on ties or separate mountings. Use of solid state electronic equipment in signal processing has cut power consumption one-half, to approximately 500 VA. Both rail signals from the scanners are read out simultaneously. Signals cannot be displaced in time due to skewed trucks, thus eliminating the possibility of false differential alarms. *Servo Corp. of America.*

## Two-way radios feature integrated circuits (RA-16)

The 3V two-way radio units are available in a trunk mount and new front mount model. Both incorporate plug-in transmitter and receiver assemblies. The units measure 13¾" x 10⅝" x 3 11/16" and weigh 19 lb. Frequency range is 150.8 to 174 MHz. The all solid-state units feature silicon devices and integrated circuits. RF power output is 35 watts, with 8 watts of low distortion audio output. A time-out timer is available, as well as operation for 1 to 4 channels, both transmit and receiver. *Signal & Communications Division, WABCO.*




## New ACI system has simplified wiring (RA-17)

A new KarTrak automatic car identification system, the 800 series, substitutes integrated circuits for other discrete semiconductor components used in earlier models.

Ten basic circuit boards, each containing up to 48 integrated circuits, form the basic system and replace the complex wiring in earlier versions. Additional circuit boards permit rapid changes in configuration at the railroad site.

The 800 series includes, as an option, a semiautomatic test set that can quickly diagnose system failures. When traced, it is estimated that 90% of all failures can be repaired by replacing a plug-in module. *Sylvania Electric Products Inc.*

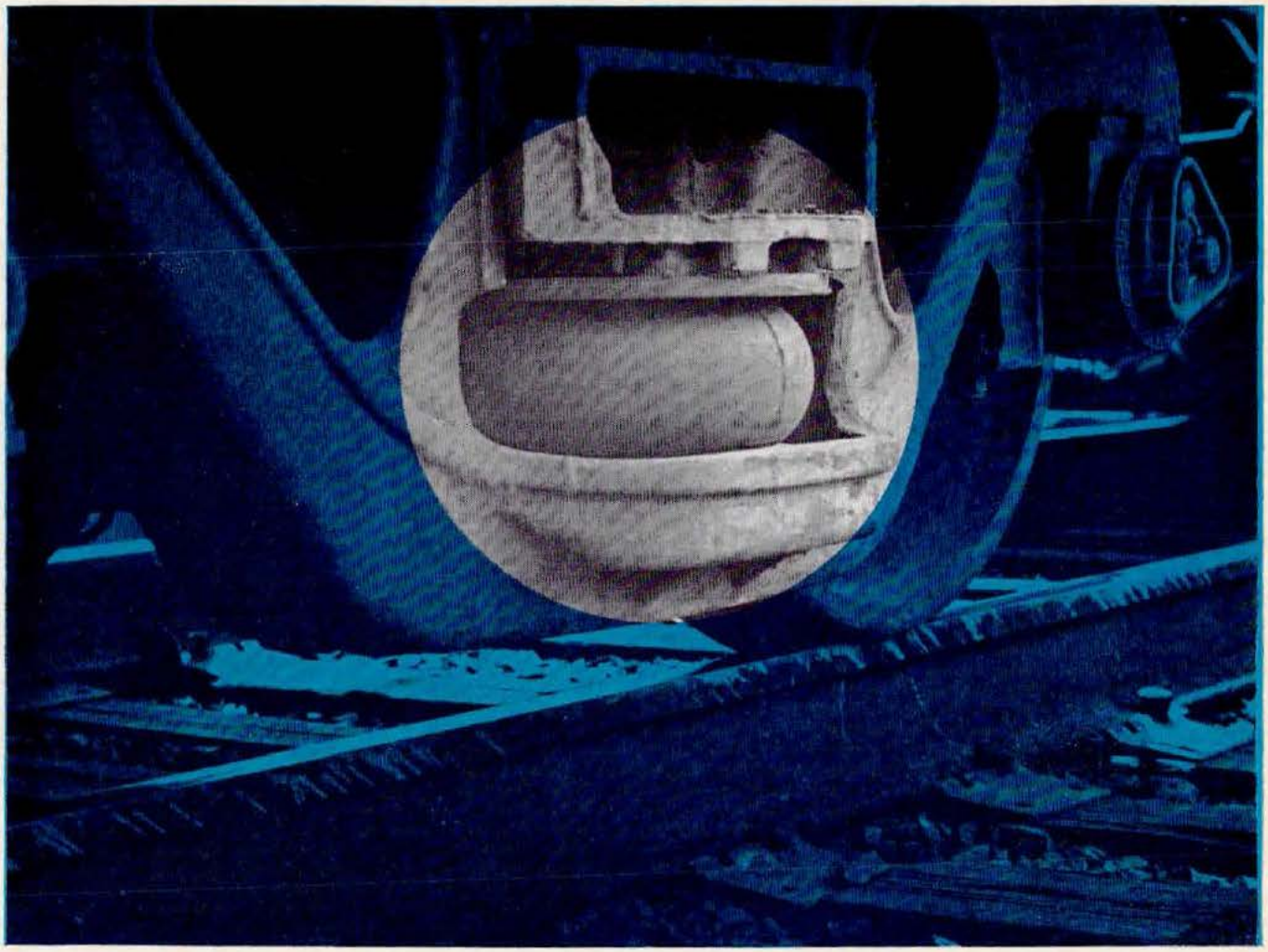
## Selective calling apparatus offers flexibility (RA-18)

Tone-pulse selective calling apparatus is designed to offer maximum flexibility in the use of various transmission media on dispatching and message circuits. Tone-pulse calling permits retention of 62-A or 63-A selector keys and 60AP or 60BP selectors, with the optional use of telephone dial at dispatchers' location.

Tone-pulse selective calling provides options for upgrading transmission circuits without the need for scrapping dispatcher or waystation apparatus. Hybrid circuits are made up of open wire, carrier, cable or microwave—any configuration capable of handling voice transmission will handle tone pulse selective calling. *General Communications Products.*

CONTINUED ON PAGE 50

# New car truck spring:



# it's unbreakable

This remarkable rubber spring for freight car trucks won't break, wear, corrode, fall out, "Brinell," or bottom abruptly.

That's quite an improvement. But what the new Lord Lastosphere spring *will do* is even better.

Thanks to its unique spherical shape, it will stiffen as loads increase, soften as loads decrease. This produces the same ride characteristics loaded or light.

It will reduce the chance of lading and bolster damage since it does not bottom solidly.

Lastosphere bonded rubber spring* for high speed, high-capacity service.

* Patent applied for.

LORD

*Lord knows...the railroad industry*

Circle 24 on coupon page 52

Just one Lastosphere spring will replace the steel coil spring pack you now use per side frame.

It will fit most standard AAR side frame designs for 70 and 100 ton cars with minor modifications.

Its specially compounded elastomer will endure railroad conditions.

Why not find out what the Lastosphere spring will do in your trucks? Both 70 and 100 ton truck springs are available.

Contact: *Railroad Products Group, Lord Manufacturing Company, Division of Lord Corporation, Erie, Pa. 16512.*

# 20 years ago we came up with a groovy idea.

It was a whole new way to secure freight anywhere on a strong steel car floor. With ordinary nails.

The idea included a wiggly groove every eight inches between sections of steel flooring. You could drive nails into the groove (where they stayed until you pulled them out) without damaging the floor. We called it NSF®, Nailable Steel Flooring, and patented it.

Railroad men called it great. And in twenty years they gave us 140,000 freight-cars worth of proof that NSF is stronger, all but eliminates floor maintenance and repair, and more than pays for itself.

Nailable Steel Flooring, installed in this Soo Line car in 1949, is still in excellent shape.

Today, there are ten NSF designs, all proven in service, in all types of cars, with all kinds of lading.

Call on the people who can call on 20 years of experience. For our new brochure, write us at 310 South Michigan Avenue, Chicago, Illinois 60604. Or call collect: 312/427-5230.

This car is equipped with our latest design of Nailable Steel Flooring.

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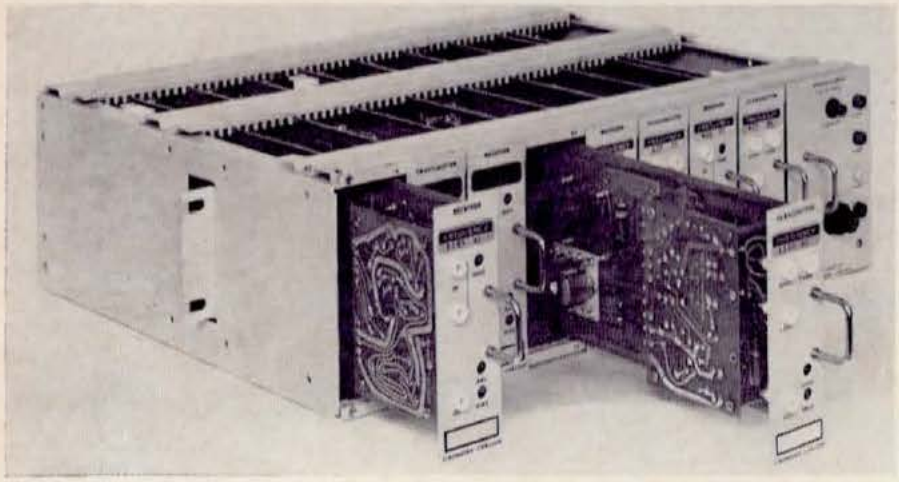
# New developments for C&S men



## Data modems work at various band speeds (RA-19)

The 835 Data Modems provide service at 75, 110, and 150 baud speeds. They are designed primarily for use with 28, 33, 35 and 37 Teletype machines and with IBM 1050, and IBM 2703 Transmission Control Units.

Employing frequency shift modulation, the electrical design provides for eighteen of the 75 or 110 baud channels to be used within a 425 to 3315 Hz bandwidth and nine 150 baud channels within 510 to 3320 Hz.

The units are available to operate in simplex, half duplex, and full duplex modes and within standard network configurations.

A full system of 18 full duplex channels with EIA or three frequency interfact, power supply and line terminating equipment, can be mounted on 26¼ inches of a 19-inch relay rack. *Stromberg-Carlson Corp.*

## New switch heater is for small-area spaces (RA-21)

The new Sno Gard puzzle switch heater is a compact unit for use in yards and terminals where space is at a minimum. The unit features a constant pilot operation. As with other Sno Gard heaters, the puzzle unit operates on propane gas firing through an orifice .040" diameter. Proper firing rates are obtained by means of a gas pressure adjustment. *Vapor Corp.*

## System measures trains at speeds up to 70 mph (RA-20)

A train length measurement system, TLM, is an analog computer that measures the length of trains up to 9,990 ft.

TLM can accommodate trains at speeds up to 70 mph. Variation of train speed have no adverse effect on system accuracy.

Two readout systems measure train lengths in siding lengths, average car lengths, or in increments of 10 ft. The go/no go system may be interfaced with a CTC field unit to display up to nine selected siding lengths that a given train will fit into. The display will hold until a new train enters the circuit. The direct readout system uses a digital meter to read out train length in feet or average car lengths (up to 180 cars). It holds this reading until a new train is ready to be measured. The meter can be as far as three miles from the TLM installation.

The compact plug-in modular design makes train meets more efficient by avoiding train "overhang" at sidings. *Marquardt Industrial Products Co.*

## Key punch has elaborate security system (RA-22)

A new key punch prepares cards or operates on-line to transmit/receive cards through any communication network. Telecard I incorporates an integral lode translator/controller which converts the parallel machine code into serial output. The unit also provides necessary synchronization with the receiving terminal and controls transmission speed. In the receive mode, the translator/controller regenerates incoming data, checks parity, and translates serial data into machine language.

As a card punch, Telecard I punches /duplicates at 25 columns per second, features a separate reject card-stacker to collect error cards via key and not by manual sorting after punching, and has an elaborate security system which alarm/locks the machine in response to unauthorized operations—completing programmed operations and letting the operator know that information keyed for an improper field was not entered. The machine also alarm/locks in response to card absence or stacker full. *Oneida Electronics Inc.*



CONTINUED ON PAGE 52

# Completely Interchangeable!

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# DOUBLE-ACTING AUTOMATIC SLACK ADJUSTER

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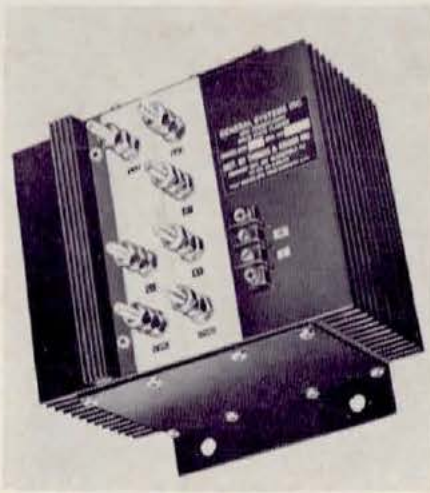
# New developments for C&S men

## Journal detector works at shorter intervals (RA-23)

Taking advantage of the characteristics of lower cost components which are responsive to high temperatures of 300 deg F to 600 deg F, the RT-15 critical journal detector trades the sensitivity and response of a higher cost sensor for more frequent inspection of the train at shorter intervals along the right-of-way.

The RT-15 is not intended to replace the conventional hotbox detector. It is designed to supplement such installations as insurance against "between detector derailments." As such the RT-15 should not be installed at intervals greater than 15 miles apart, preferably, at 10 mile intervals.

Readout for the RT-15 consists of a rotating beacon with a side-of-train indicator, which is actuated by a hot journal passing the critical journal detector. *Railtron Corp.*

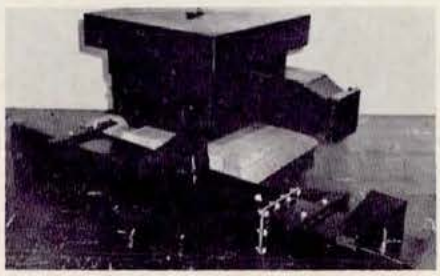


## Crossing flasher operates on AC or DC (RA-24)

A new, completely solid state, highway crossing flasher known as the model EOR is designed for optional operation from either AC or DC, at voltages within the range of 8 to 18. The unit is rated up to 30 amp lamp load (15 amp flashing leg). It features a magnetic timing circuit not affected by temperature or aging of components. Therefore, it will not require adjustment.

Model EOR also features built-in lightning protection as well as specially designed short circuit protection which assures that one bank of lamps will remain lighted at all times, during regular operations, and there will be no damage to any other associated equipment.

When total load exceeds 30 amp and paralleling two or more flashers is required, the lamps will operate in synchronization. Over-all dimensions of the unit are 7⅝" wide, 5¾" deep and 8¼" high. *Thomas A. Edison Industries, Primary Battery Division.*



## Switch heater uses propane, natural gas or oil (RA-25)

A new hot air switch heating system, type HAB 900-2 uses fuel oil, propane or natural gas.

The heater delivers hot air to the switch points and also circulates it to rods and tie spaces in the switch operating area. *The Rails Co.*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THE TRANSPORTATION WEEKLY

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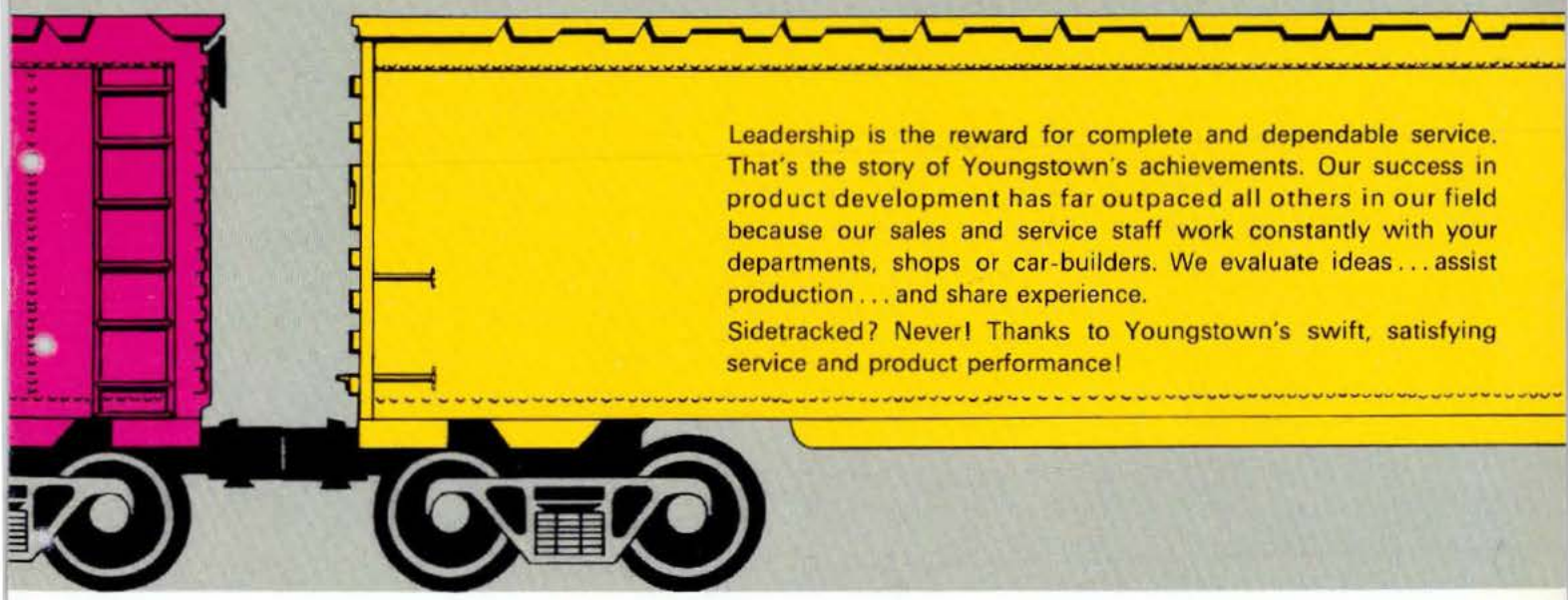
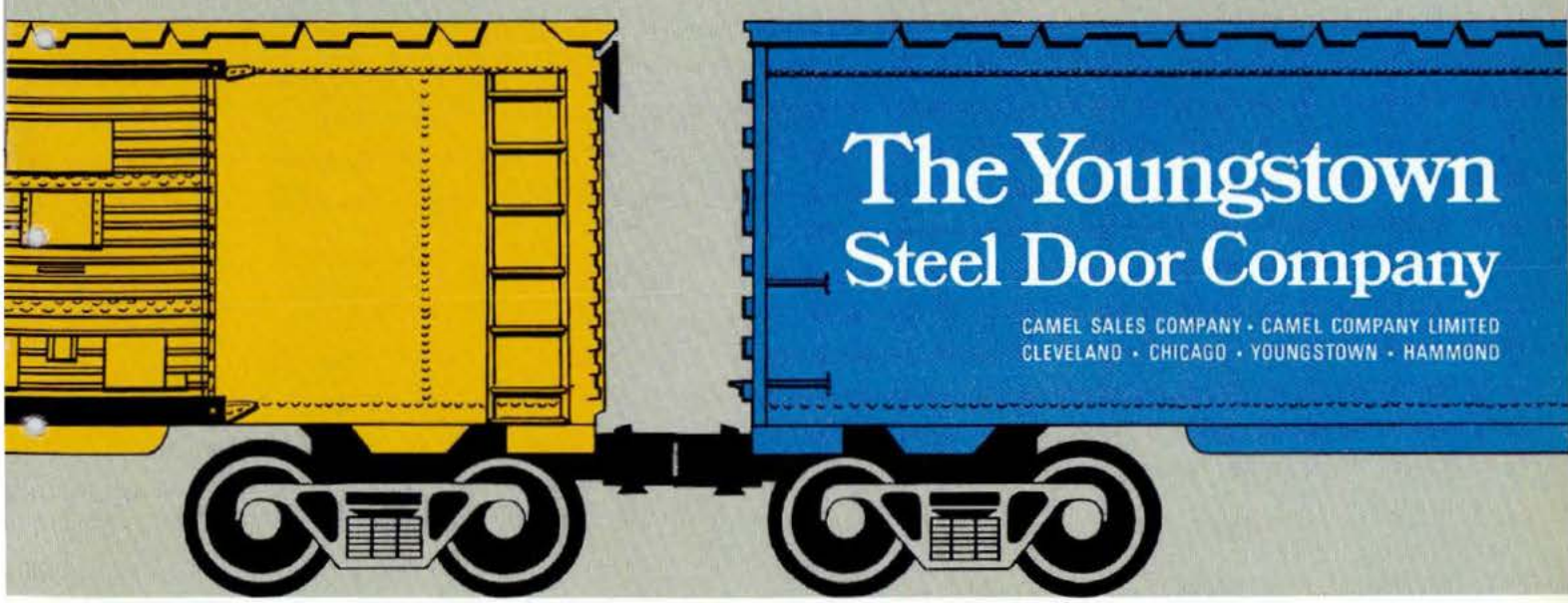
• Inquiries can be processed only if title and company are shown. 9/15-22/69

## New cable plow is mounted on a flat-car deck (RA-26)

A new, improved cable plow is now mounted on the deck of a railroad flat car as an integral unit. A feature of this type of mounting is that complete clearance is provided while the plow is working, especially when being moved from one location to another along the railroad. Also, the plow does not have to be removed from the flat car to move it to various work sites. Also improved is the mobility of the plow arm in five dimensions. *Henkels & McCoy Inc.*

sidetracked?
never! Youngstown's product excellence and full service assures uninterrupted operation!


Leadership is the reward for complete and dependable service. That's the story of Youngstown's achievements. Our success in product development has far outpaced all others in our field because our sales and service staff work constantly with your departments, shops or car-builders. We evaluate ideas... assist production... and share experience.
Sidetracked? Never! Thanks to Youngstown's swift, satisfying service and product performance!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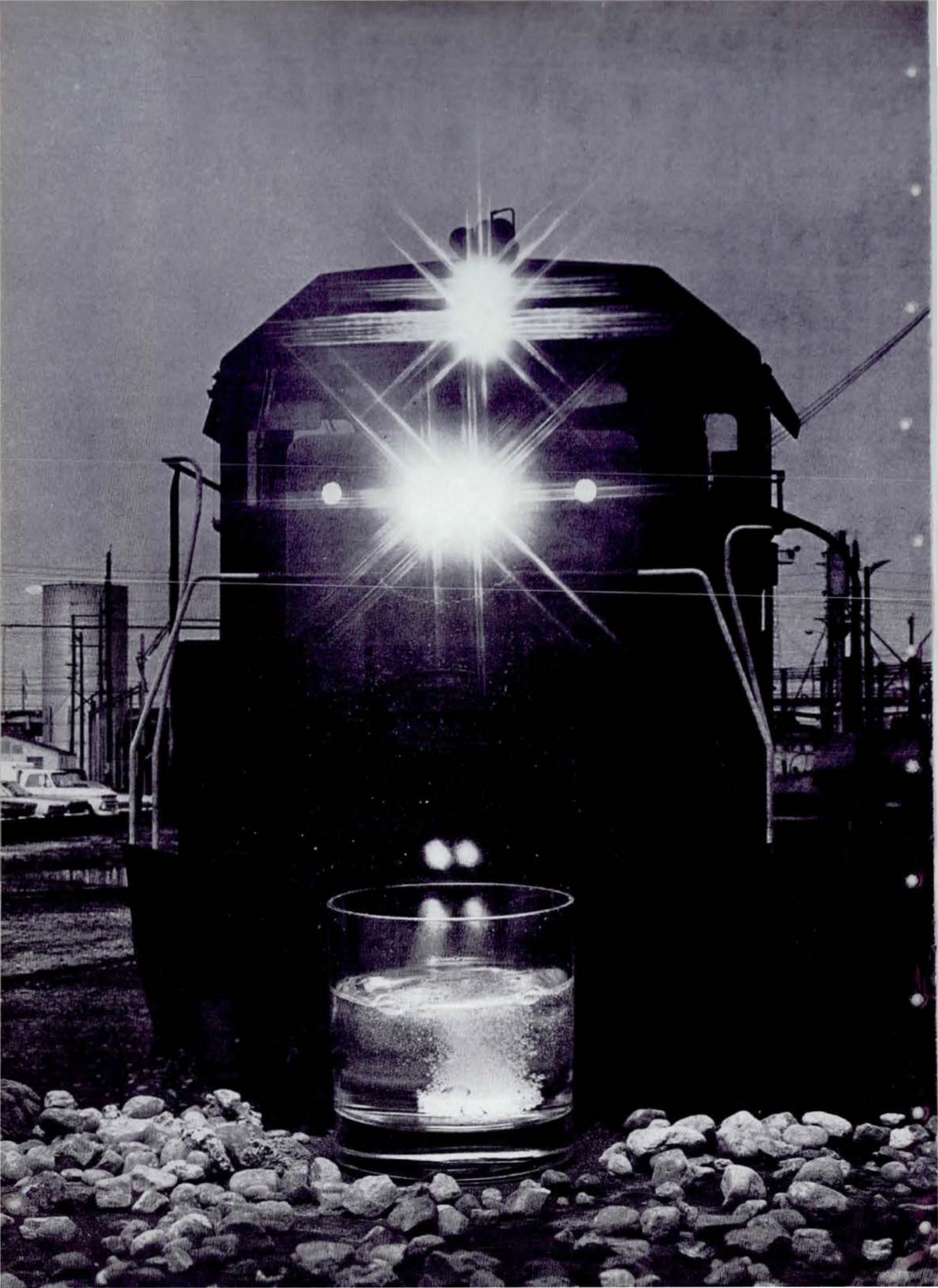


# Humble announces the Antacid Railroad Oil.

**New DIOL® RDS-81 tripled oil life in a severe-service railroad test with high-sulfur fuel. Projected savings from 8-month test: $1500 per locomotive per year. The reason: superior base number retention.**

It's easy to control acid build-up, temporarily, by loading an oil with alkaline additives. But Humble has done something more permanent. We made new DIOL RDS-81 inhibit acid formation by inhibiting oxidation.

So it retains its alkalinity and gives anti-wear protection in severe service long after other oils fail.

In a test on a western railroad, DIOL RDS-81 actually started out less alkaline than the high-quality oil that the railroad had been using.

But their oil dropped to their condemning pH limit of 4.5 within 2 months in each of the 3 comparison locomotives. 12 oil changes in 8 months.

**4 oil changes vs. 12**

New DIOL RDS-81 running in the same high-output type locomotives, with the same high-sulfur fuel in the same expedited heavy-duty freight service required a total of only 4 changes. 4 vs. 12: three times longer life.

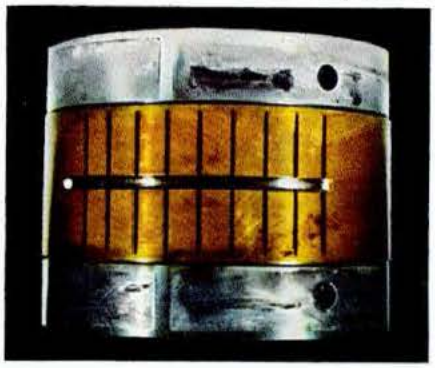
Projecting the oil, filter and labor savings of DIOL RDS-81 in this test indicates annual savings of $1,000 per locomotive.

**30% less top ring side wear**

An additional $500 per year in maintenance savings is projected from the 8-month reduction in wear. For example, critical top ring side wear, which determines the overhaul period of these engines, was 30% less with our new oil.

Want to know more about this astonishingly long-lived oil? Clip the coupon and let a Humble railroad man give you the money-saving details.

**Visual proof of antacid action.**



LEAD FLASHING on this upper connecting rod bearing is completely gone after 97,000 miles on an Eastern railroad using high-quality oil.

LEAD FLASHING is still intact after 97,000 miles on new DIOL RDS-81, same road, same service. Striking evidence of the anti-corrosive action of the antacid oil.

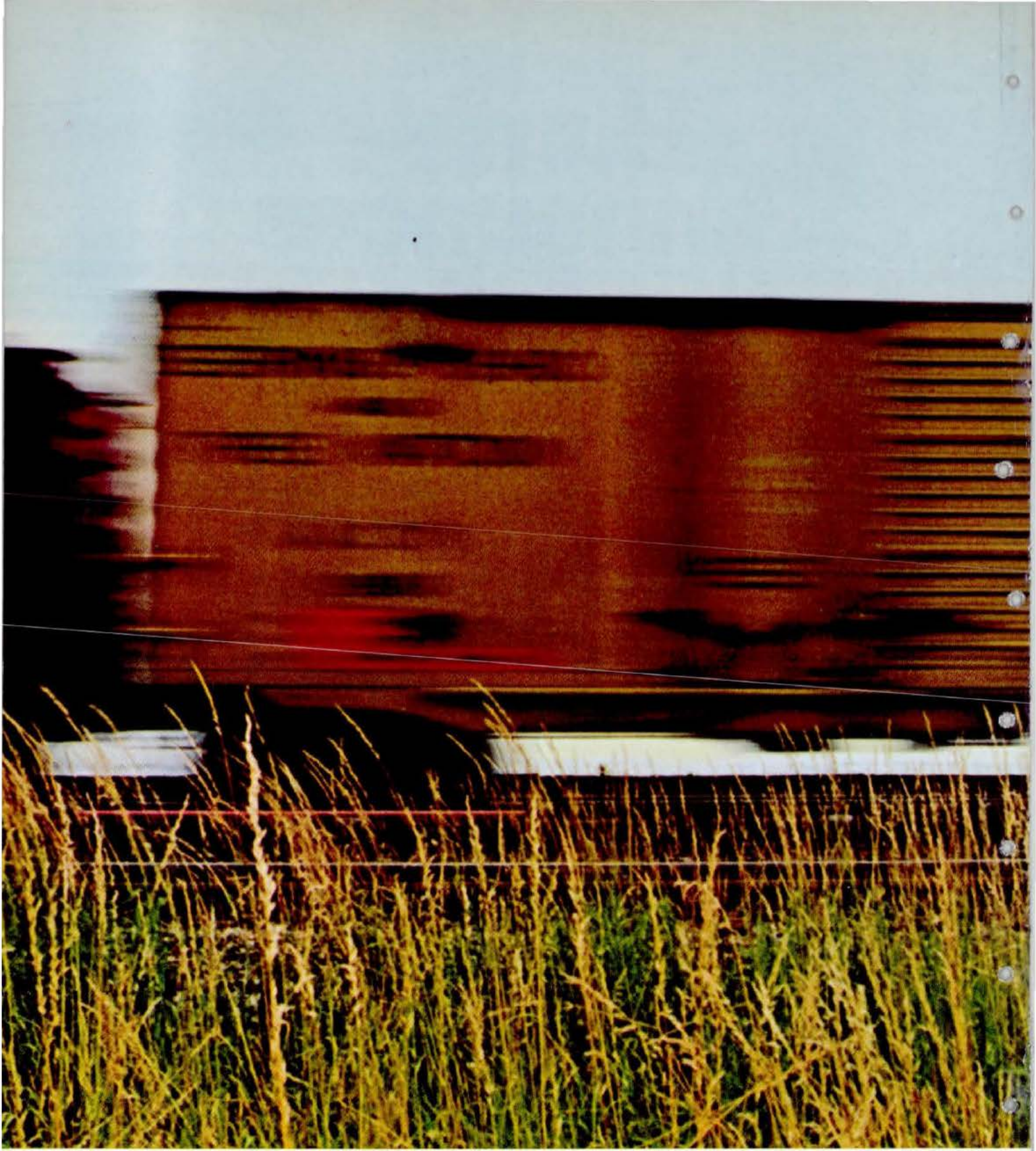
Esso

**Where you get all the extras.**

HUMBLE OIL & REFINING COMPANY
Railroad Sales Department
P. O. Box 2180
Humble Building, Houston, Texas

Yes, I want to know how much extra oil life we can expect with new DIOL RDS-81, the antacid oil. Send details of tests and let's discuss.

Name _____ Title _____ Railroad _____ Address _____ City _____ State _____ Zip _____ Phone _____



# Read 'em

*Trademark

Even if they're whizzing by at 80 miles an hour.

It takes two pieces of equipment: the KarTrak Scanner and Decoder.

They work together like an eye and a brain. Instantly they read the KarTrak labels on a passing train and record type of car, owner and car number.

(No human eye or brain is fast enough to do this. And nobody could work at this job 24 hours a day in all weather as our equipment does.)

The data read by Scanners and Decoders can be printed out or put into a computer to help you control operations as you never

# like a book.

could before. You'll always know what's rolling on your tracks.

When the railroads needed an automatic car identification system, Sylvania came up with the answer. Since we're the people who developed the KarTrak ACI System,* we're able to give you reliable equipment.

The more it reads, the more you know.

Without it, you won't be able to read at all.

And in this day and age, who can afford to be illiterate?

*For technical details, write to: Sylvania Information Systems, Commercial Electronics Division, Waltham, Mass. 02154.*

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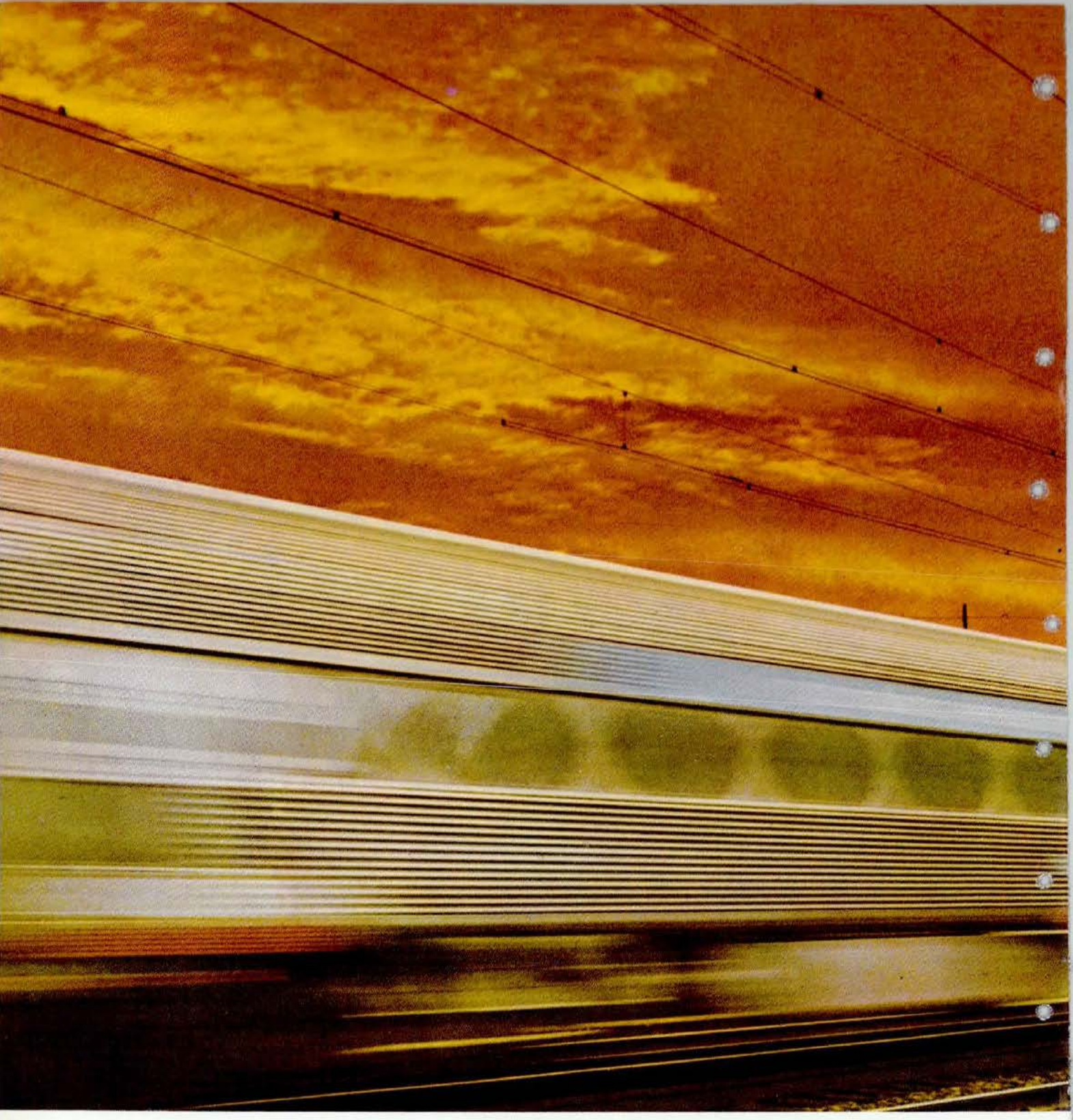


# Now-New York to Washington at 110 mph

*During test period, this Department of Transportation train reached top speed of 156 miles per hour.*

Step aboard the Penn Central's new Metroliner at 8:30 a.m. in the heart of Manhattan, and three restful hours later you'll be in Washington's Union Station. En route you'll glide along at speeds up to 110 miles per hour, in quiet and comfort you'd never have believed possible in ground travel.

The Metroliner is now running on regular schedules between the two cities, with stops at Newark, Trenton, Philadelphia, Wilmington and Baltimore. Service will be increased as quickly as the full order of new cars is delivered.

There are many intercity passenger runs of 500 miles or less, where 125-mph trains could cut present running time as much as one-half. Backed by an enthusiastic public, these faster schedules could become reality with the upgrading of existing tracks and the addition of modern coaches and parlor cars.

Much of the all-new, continuously welded rail in the Penn Central's high-speed system was furnished by Bethlehem Steel. We also produce forged-steel wheels and axles for railway cars and locomotives, as well as steel freight cars and parts for the dynamic new railroad industry.

**BETHLEHEM STEEL**

BETHLEHEM STEEL

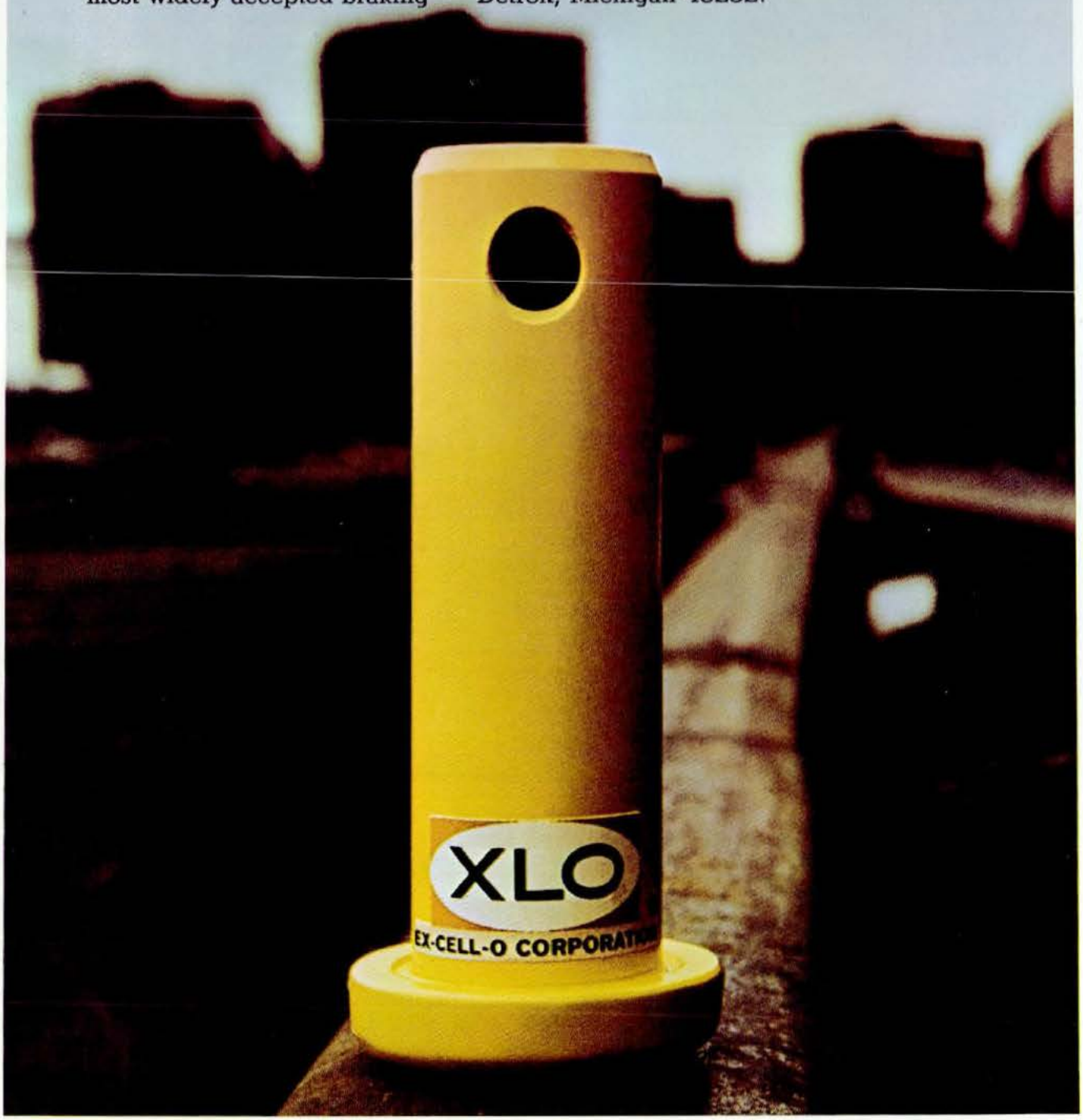
## Ask WABCO about Ex-Cell-O's track record.

Westinghouse Air Brake Division demands a lot of itself. And consequently delivers a lot to its customers. Brakes that stop today's high-speed, high-mileage freight cars faster and more economically.

As a result, the WABCOPAC brake assembly is one of the most widely accepted braking systems in the industry.

One of the ways WABCO stays on top is with Ex-Cell-O F Series Pins—the toughest you can buy. Pins that roll hundreds of thousands of proven maintenance-free miles.

Like to hear more? Write Railway Products, Ex-Cell-O Corporation, Box 386, Detroit, Michigan 48232.



# Ops approve minitrain pact on PC

Penn Central and its operating unions have reached agreement on minitrain—in a six-month experimental pact covering grain-gathering service in the Indianapolis area. Illinois Central has also been talking minitrain with the ops, and recently ran a two-week operational test under existing agreements. PC's arrangement, however, is the first formalized carrier/union agreement "designed to attract and handle new business" via the minitrain route.

The agreement provides that PC may operate trains of not more than 30 cars over designated routes or combinations of routes "without regard to terminal limits or seniority district boundaries." The new-business aspect is specifically referred to, and the service "is not intended to be used as a substitute for established road and/or yard service."

Under the agreement, crews operating in turnaround service may be required to:

—Secure engine and caboose and move to the terminal point where the initial pick-up of cars is to be made.

—Pick up cars for their train first out and coupled in train yards within the terminal, or assemble cars for their train at the terminal elevator or elevators and/or at grain-processor location(s), "including such switching . . . as may be necessary."

—Place grain cars for loading at designated elevators along the route or routes.

—Pick up grain cars from designated elevators.

—Dispose of cars "by making straight set-offs in train yards or dispose of cars at terminal elevator(s) and/or grain procesor(s) including such switching and/or spotting as may be necessary."

—Dispose of engine and caboose.

Nothing is said in the agreement about crew size (Indiana is one of the states with crew-consist laws still on the books).

Rates of pay applicable are to be standard basic yard rates for a five-day work week, with road rules applying.

Review of the agreement by PC, the United Transportation Union and the Brotherhood of Locomotive Engineers is to begin 30 days before scheduled expiration. ■

FRANK MALONE

# WATCHING WASHINGTON

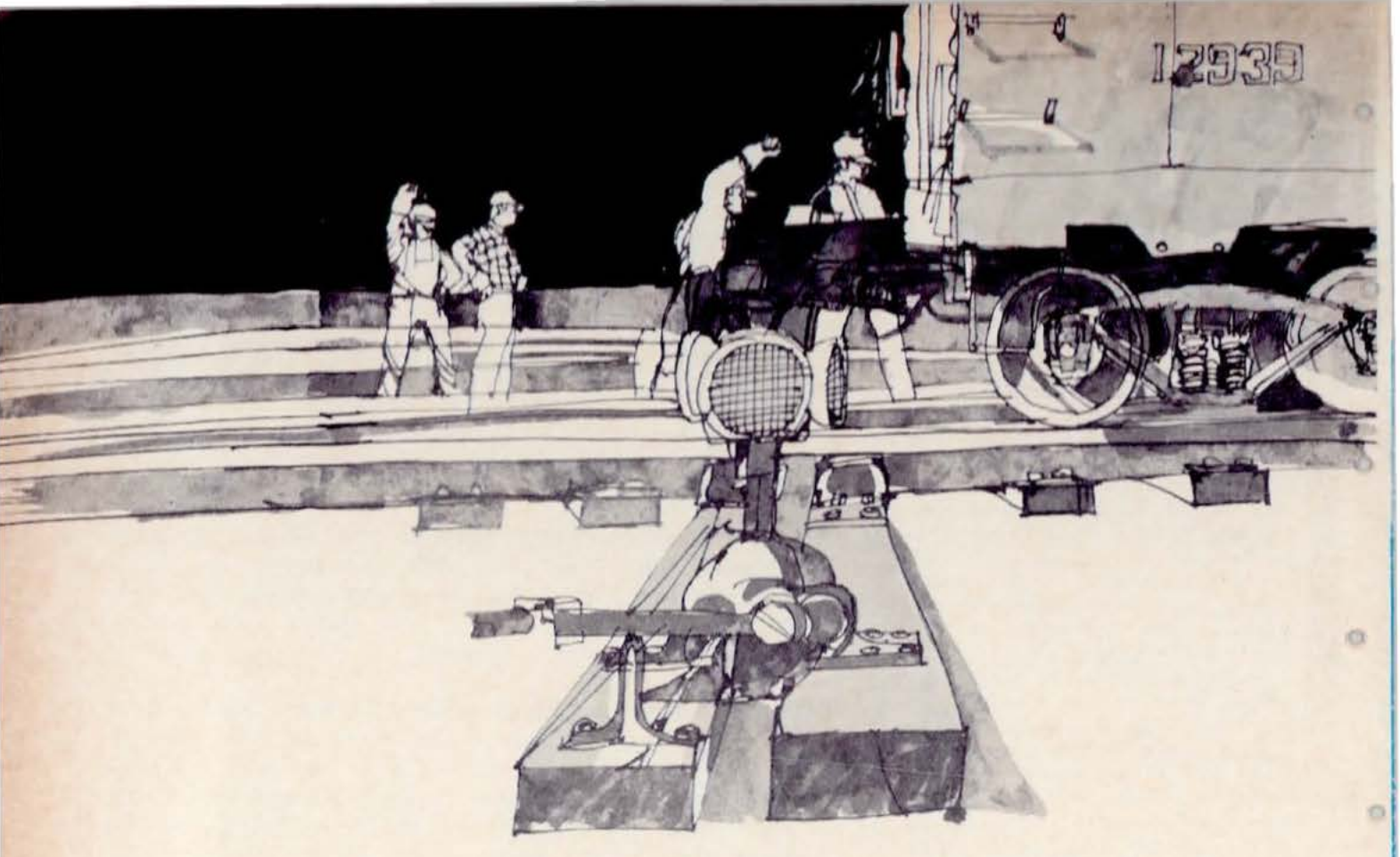
**YOU'RE A BRIGHT YOUNG MAN** in the Federal Railroad Administration. You have a better idea. But Congress must appropriate money for your idea. Hang on. Before your idea even reaches Capitol Hill, you must feed it to the bureaucrats and see if anyone swallows.

**YOUR IDEA WILL BE PART** of the FRA budget for the fiscal year starting June 30, 1971. You must start right now. By November, the general shape of your idea must be ready for inclusion in FRA study and program proposals to the Department of Transportation. DOT is getting its general plans ready for the Bureau of the Budget. The next step comes in January 1970. You get a guidance memo from DOT on outlines and due dates, based on BOB guidance memos to DOT.

**YOU MUST GET DOWN TO DETAILS** now for the first high-level look at your idea. This comes in May 1970 when FRA again submits its proposals to DOT. The deputy undersecretary holds policy-level reviews with FRA. Then the Secretary himself takes a look. With the proposals of all his offices before him, the Secretary drafts a tentative DOT program. Your idea is included in this draft as it circulates through the Department for comment. At the same time, suggestions for revision go to FRA. The DOT tentative draft also goes to BOB. By August, DOT comments, FRA revisions and BOB reactions are back to the Secretary for another review. The Secretary then tells FRA to prepare budget estimates. Your idea gets dollar signs. By Oct. 1, the final DOT program memorandum, program and financial plan, and budget material make the last trip to BOB.

**YOUR IDEA IS READY FOR THE WHITE HOUSE** after BOB review and hearings with DOT. It is some time in December 1970. The President tells BOB what he thinks. BOB tells DOT. FRA learns how much money the President thinks FRA should get for fiscal 1971. You find out whether or not the budget for your idea must be altered.

**YOUR IDEA HAS SURVIVED THE BUREAUCRACY.** Now find out how it stands up against the politicians. Between now and June, House subcommittee hearings cover FRA policy, major objectives and budget details. Senate subcommittee hearings cover FRA appeals on House reductions. By June 30, your baby has indeed come a long way.




**For Communications, Signaling, Power:**

# UNDERGROUND CABLE SYSTEMS

**Will handle all your needs today, provide unlimited flexibility for tomorrow!**

Every communications need . . . every signaling, switching and control function . . . every power requirement . . . can be accommodated with modern buried cable. And LANDCOM cable systems offer totally reliable performance, as much flexibility as you'll ever need, and reduce maintenance costs and worries to the vanishing point.

Power and communications/signaling cables can share the same right-of-way, unaffected by the weather, vandalism, corrosion, or other hazards that afflict exposed plant.

But most important, cable is the medium of the future, not only because it is free of radio frequency allocation problems (each cable has its own private RF spectrum), but because it is so easy and economical to adapt to tomorrow's needs. For instance, a 60-voice-channel system can be upgraded to 300 channels, 600, or more at minimum cost. And all along the route, new communications and signaling functions can be added at any time—wayside phones, automatic block control, hotbox detectors, TV monitors, etc.

Another big plus: cable communications systems provide superior input for computers and other automated systems. Here, reliability and the ability to pass data flawlessly are paramount considerations, and in both respects cable stands at the head of the class!

LANDCOM is ready to take your cable projects from the very outset—the preliminary study phase—to complete 'turnkey' operating systems. For detailed information about LANDCOM cable systems engineering for railroads, please contact:

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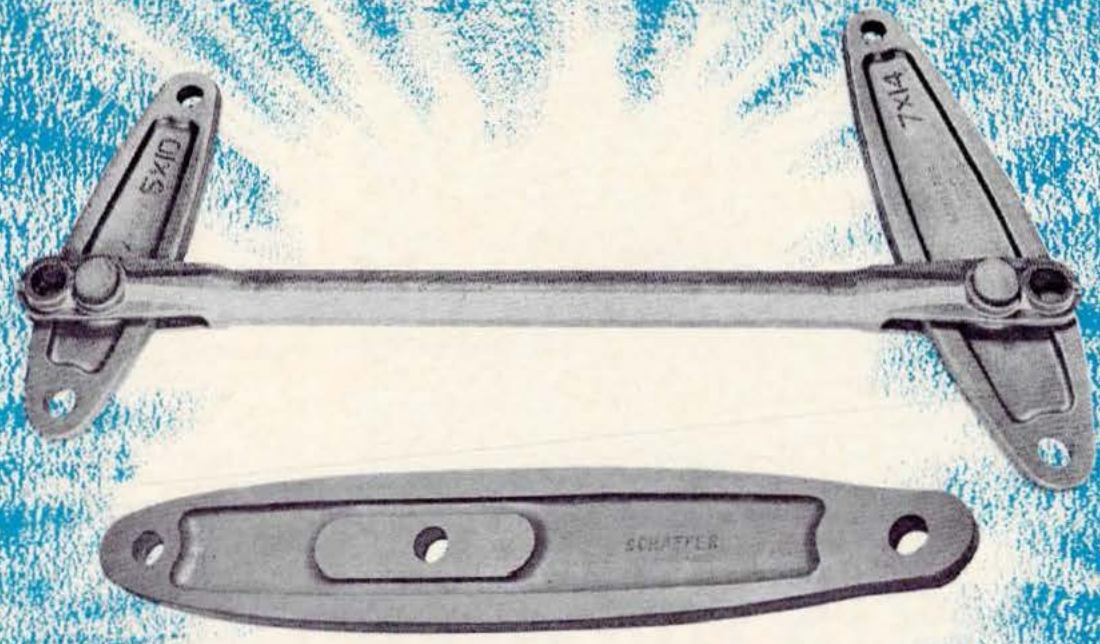
Circle 59 on coupon page 52

# Schaefer

# CAR LIFE SERVICE




**An Original Application of Schaefer Brake Appliances—Then, No Maintenance Nor Replacement During the Life of the Car**

**Conventional Brake Rigging Provides the Most Reliable and Economical Braking System**

## SCHAEFER EQUIPMENT COMPANY

Koppers Building · Pittsburgh, Pa.

Circle 30 on coupon page 52

# THE PARTS YOU NEED
## for the service you want!

HUNT-SPILLER REPLACEMENT PARTS—Cylinder Liners, Cylinder Heads, Pistons, Jackets, Piston Rings and Bearings—are known the world over to be made from the finest metals—to exact specifications. Hunt-Spiller replacement parts are completely interchangeable with original equipment parts.

Hunt-Spiller products are rigidly controlled through the complete manufacturing cycle. There's proof of this from service in a variety of railroad, marine, and industrial installations throughout the world.

Keep engines in full service—think of HUNT-SPILLER for replacement parts. Call, write or wire today.

HUNT-SPILLER
MANUFACTURING

Circle 40 on coupon page 52

# Locomotive simulator looks like real thing

*(Continued from page 37)*

assignment of building the first mobile locomotive/train operations simulator. The road undertook the task immediately of preparing an existing railroad car for the job of serving as the training device's mobile home. Also, because of the Santa Fe's intimate knowledge of its own system and operating conditions, its Film and Photographic Bureau, under the direction of Jerry Curto, began mapping plans for production of the film which would serve as the heart of the simulator's vitally important visual system. Link, meanwhile, began in earnest to draw up plans for the simulator's sound, motion and visual projection systems, as well as for the computerized control system which would synchronize the synthetic into a believeable, almost real, train operations situation.

Actual construction of the replica of the cab of an SD-45 locomotive, plus the motion and sound subsystems, was handled at Link's Silver Spring (Md.) plant. The visual subsystem's projection unit was assigned to the builder's Binghamton (N.Y.) plant.

With the Santa Fe and Link working simultaneously on the simulator, its various subsystems and the vehicle that would transport it to training sites along the road's 13,000-mile system, much valuable time was saved. The simulator car itself was completely reconstructed from a former chair-club car that served initially on the road's crack Kansas Citian passenger train. The conversion work was performed at the Topeka, Kan., car shops.

To prepare the car for its new assignment as the mobile home for the simulator, craftsmen at the Topeka shop had to remove virtually all its passenger car appointments. All the windows on one side and almost all those on the other side were eliminated and replaced with stainless steel sheeting. Inside, over one-third of the car was converted over to accept the simulator's visual subsystem and the trainee cab. The remainder of the car was then arranged to hold the computer, auxiliary power plants for the simulator, living quarters for training personnel, equipment to activate other subsystems, etc.

The undercar area was also outfitted with new and special equipment to operate the simulator's special systems. The car was completed and shipped to the Link plant in Maryland in May at about the same time that the Santa Fe's photographic team was em-

*(Continued on page 68)*

# When freight cars got bigger... Edgewater was there!

The 50-ton boxcars and the 70-ton hoppers—long the workhorses of the railroad car fleet—are being replaced by cars half again as large, and by other heavy-duty cars for specific products. They serve shippers better because they carry heavier loads at faster speeds.

Naturally, these cars required bigger, stronger wheels—and when need arose, Edgewater was ready with 38-inch, heavy-duty wrought steel wheels.

Today, Edgewater wheels are better than ever before. Our electric furnace steelmaking processes, our forging and rolling techniques, our modern machining and heat treating facilities all contribute to the production of wheels that provide better service, greater safety, longer life.




**EDGEWATER CORPORATION**
P. O. BOX 478 PITTSBURGH, PA. 15230

MEMBER RPI RAILWAY PROGRESS INSTITUTE

## FOR MILESTONES AHEAD

Edgewater has consistently worked closely with railroads and carbuilders to meet or anticipate their changing requirements. The development of the 38-inch wheel is one example of the effectiveness of this policy.

Edgewater intends to continue this policy, and to offer our specialized services to assist progress in railroading.

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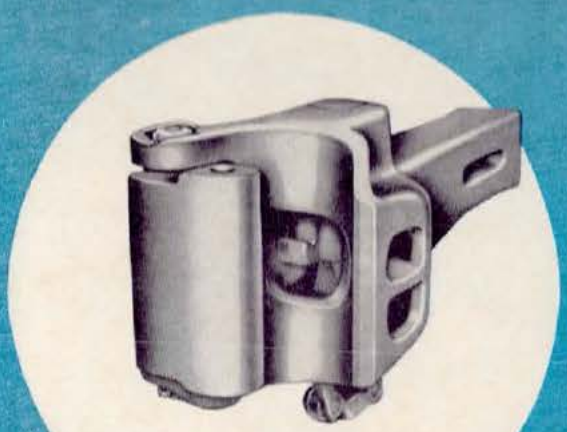
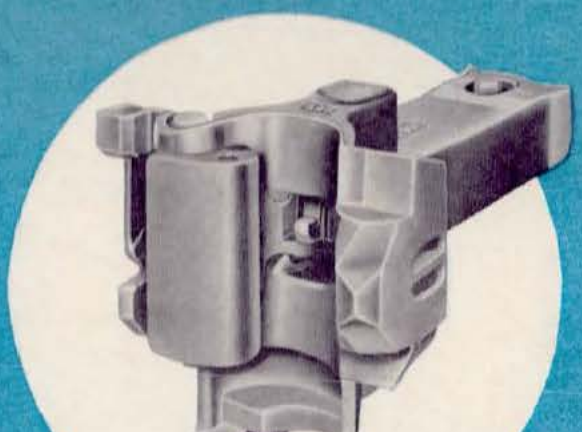
if it rolls on rails specify

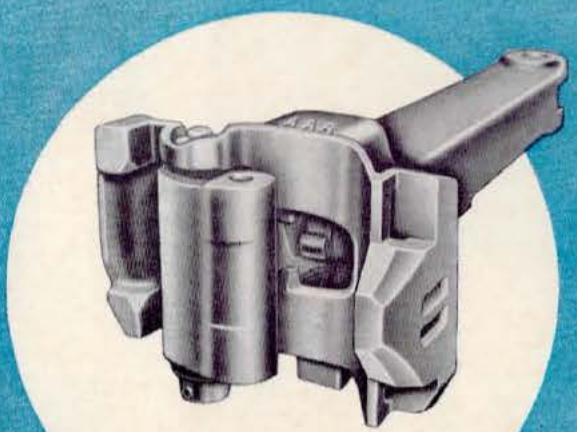
# SYMINGTON



AAR Standard and Alternate Standard "E" Couplers



AAR Alternate Standard Type "F" Interlocking Coupler



AAR Standard Type "H" Tightlock Coupler

## Couplers For Freight and Passenger Cars and Locomotives

- Unmatched experience in coupler manufacturing techniques.
- One of widest lines of Standard and Alternate Standard Couplers.
- Integrity of delivery, quality and service.
- Metallurgical and dimensional accuracy.
- Complete inventory of coupler replacement parts.

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# WAUGH

*Type 730-E Friction Rubber (Urethane) Draft Gear*

## Only Full-Capacity "E" Draft Gear For Pre-1961 Cars

Because coupler horn clearance to striker on most pre-1961 cars is 3" or under, all other "E" specification draft gears will allow the couplers to hit the striker before reaching rated capacity. Only Waugh Model 730-E attains full rated capacity within 2¾" travel-nominal. It fits the Standard 24⅝" draft gear pocket, produces 51,300 foot pounds official capacity, meets AAR Specification M-901-E. Urethane springs assure effective operation in extreme temperature ranges from —40° to 175°F.

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Circle 32 on coupon page 52

# Locomotive simulator looks like real thing

*(Continued from page 64)*

barking upon its first filming run for the simulator's visual subsystem.

● **Three filming runs.** The photographic run covered the 46 miles of Santa Fe territory between Taiban and Clovis, in eastern New Mexico. Since then, the photographic team has also accumulated film footage of those portions of the Santa Fe system between Fox and Domingo, also in New Mexico, as well as the LaPlata-Marceline run in Missouri. Thus far, the Taiban-Clovis run is the only one which has been fully programmed for simulation purposes.

While the filming of the initial run took only about two hours to complete, according to Curto, the planning and preparation for the initial run, on the other hand, took weeks and months to develop. Because of the importance attached to the film's role in making the simulator as "real" as possible, extraordinary attention was given to its preparation. The other subsystems, like those for the motion and sound simulations, were mere adaptions of other systems which had years of service in aircraft, highway vehicle and more recently, spacecraft simulators, and did not require as much raw developmental time.

● **Special filming vehicle.** A one-time business car, outfitted with a special housing on its open platform, was used by the Santa Fe photographers as the filming vehicle. It was selected because of its excellent stability. In earlier tests, an actual locomotive and a baggage car were tested for this special assignment, but they lacked some of the business car's features. At first it was thought that some kind of damping or shock-absorbing device would be required to keep unwanted vibrations out of the film, but the business car's own suspension system proved to be sufficient.

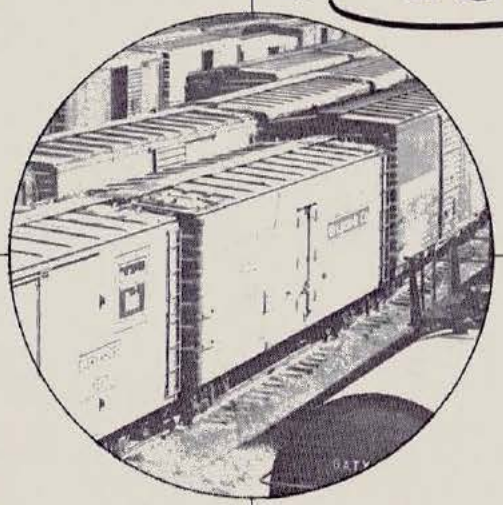
The film (16 mm color with an ASA rating of 16) was shot from a height that corresponds with the height off the rail of the locomotive cab's front windshield. The filming camera was actually turned on its side so that the film frame's configuration would match the vertical configuration of the windshield. While this meant that Link engineers had to arrange a series of mirrors in the projection system to right the scene 90 degrees, it did prevent film masking, a condition which could affect resolution and quality.

The rear screen projection unit developed by Link features a collimating lens located just in front of the trainee cab's window. This lens forces the trainee to focus and re-focus his eyes (as he normally does in a real life situation) when he transfers his attention from, say, the view seen through the front window to one of the up-close gauges in his cab. The visual subsystem also has special spot projectors which the instructor can use to project signal lights on the trackside signal stanchions, and thereby interject special problems into the training session.

(Southern Pacific has a locomotive/train operations simulator in production at Downey, Calif.)

● **Synchronizing brain.** The brain that synchronizes all the various sounds, sights and motions of railroading and places them in a context which may make the synthetic difficult to distinguish from the real, is a Honeywell H-316 computer. It and its control console are located directly behind the simulator cab. This is the station manned by the instructor. The man chosen to serve as the first simulator instructor is Will Ambrose, assistant to the superintendent—air brakes, a 30-year veteran with a good portion of this time spent as a fireman and engineer. ■


Our Job



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Most of our freight car forgings — truck levers, push rods, brake jaws and others — arouse little excitement. They're specified and installed, and afterwards no one thinks much more about them.

Except us. We are aware of today's increasing demands on *all* freight equipment, and we make sure that our engineering and production practices keep pace. Write for current information about Pittsburgh special and standard freight car parts, or call our Railway Forgings Division (412-264-4000.)

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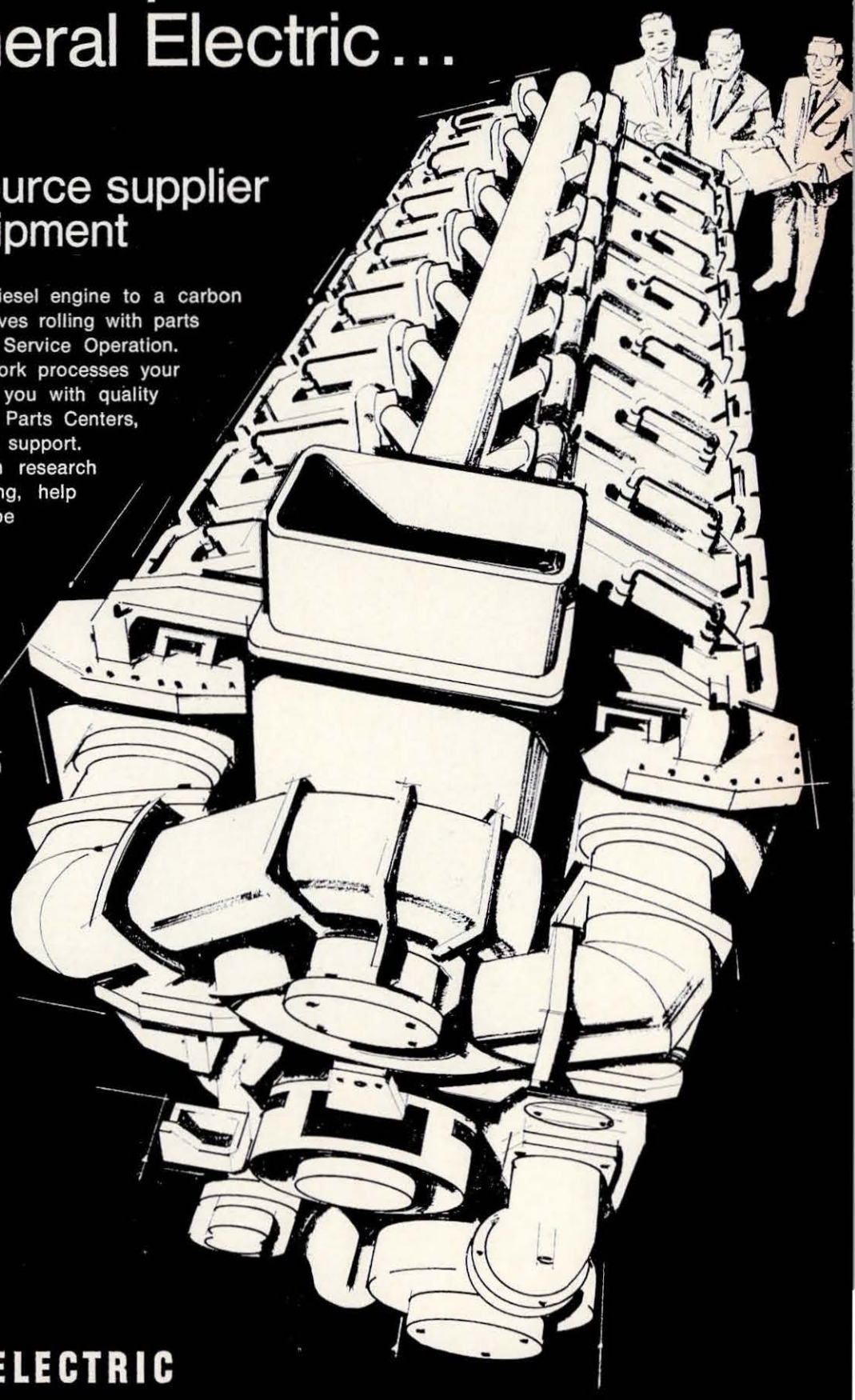
# Buy Efficiently — Specify Transportation Parts from General Electric...



## Your single source supplier of original equipment

Whatever the need—from a diesel engine to a carbon brush—keep your GE locomotives rolling with parts from the Transportation Parts Service Operation. Our nationwide computer network processes your inquiry in seconds to provide you with quality parts backed by our Regional Parts Centers, Service Shops and engineering support. GE parts, because of modern research technology and systems testing, help assure longer life. They can be applied to upgrade your existing units. You receive greater value for your dollar. To satisfy the total parts needs for your GE fleet, be sure to specify renewal parts from General Electric—your single source supplier of original equipment. 121-42

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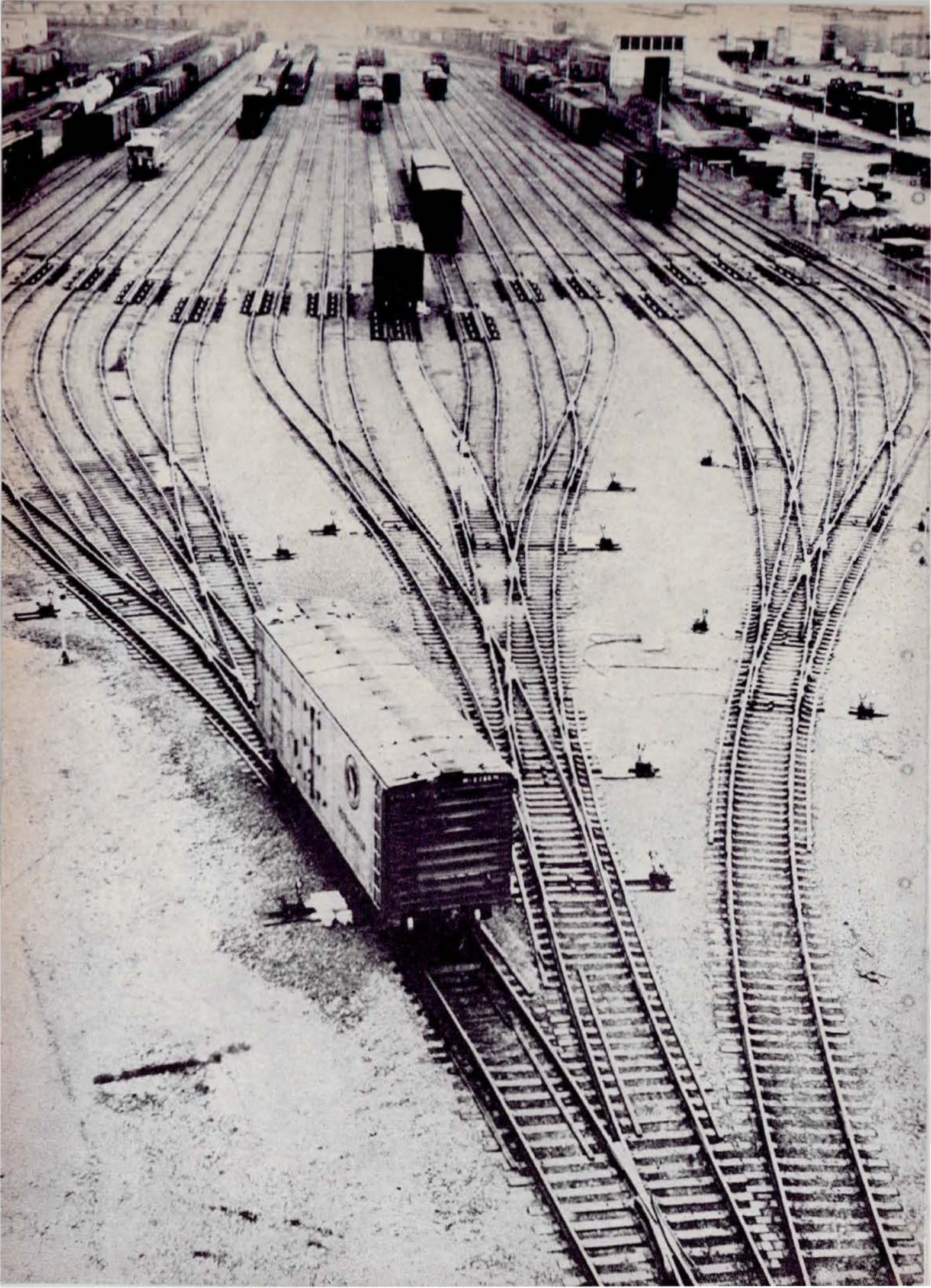


# GREAT NORTHERN DOUBLES CAR-HANDLING SPEED WITH ABEX ECONOMATIC® YARD

Between 1962 and 1967, freight traffic at Balmer flat yard, Seattle, increased 21 per cent.

To meet the load, Great Northern brought in extra switch engines. More personnel. But the switching job was still too heavy to handle efficiently.

Great Northern solved the problem with wide-scale modernization and conversion to "push button" switching, incorporating the newest Abex Economatic Yard concept.

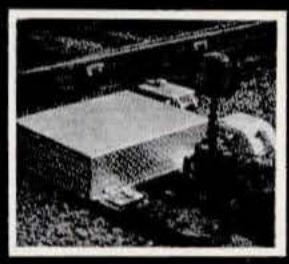
Abex route switching control panel of Great Northern's Economatic installation at Balmer Yard.

Now Balmer handles 50,000 cars monthly. Cars move through the yard about twice as fast as they did with flat switching. Costs are lower. Time is saved.

The Balmer operation, based on Abex solid-state route switching control, utilizes a master retarder on a low hump, with a weight-compensating retarder for each of 16 class tracks. Tower-controlled Racor H-22 hydraulic switch machines route cars to proper tracks. Mechanical retarders at yard end eliminate skates.

Here are a few of the many time-and-money saving features of Balmer's Economatic yard:

- Humping speed of 3 cars per minute.
- Improved car separation through minimized crest-to-clearance distance.
- Minimum grading costs; a low hump with scattered tracks provides required car separation.
- Coupling speed limited to 5 mph or less reduces damage to cars and loading.
- Stalling or cornering at curves or switches is eliminated.
- No sophisticated computer needed to determine rollability.
- Operator simply routes cars; retarders operate automatically for pre-determined release speeds.
- Car movements can double those previously possible.



One of 15 Racor H-22 switch machines controlled from tower with Abex equipment.

Want a demonstration of "push button" switching efficiency? Ask your Abex representative to arrange for you to see the Economatic concept in operation.

Abex
CORPORATION
**Railroad Products Group**
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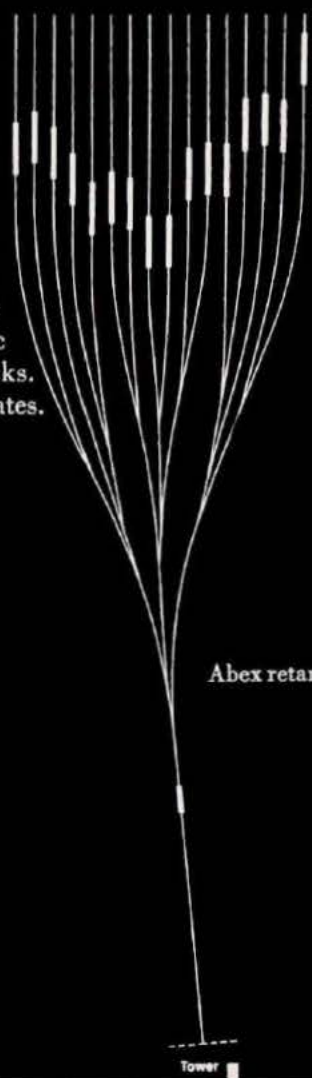
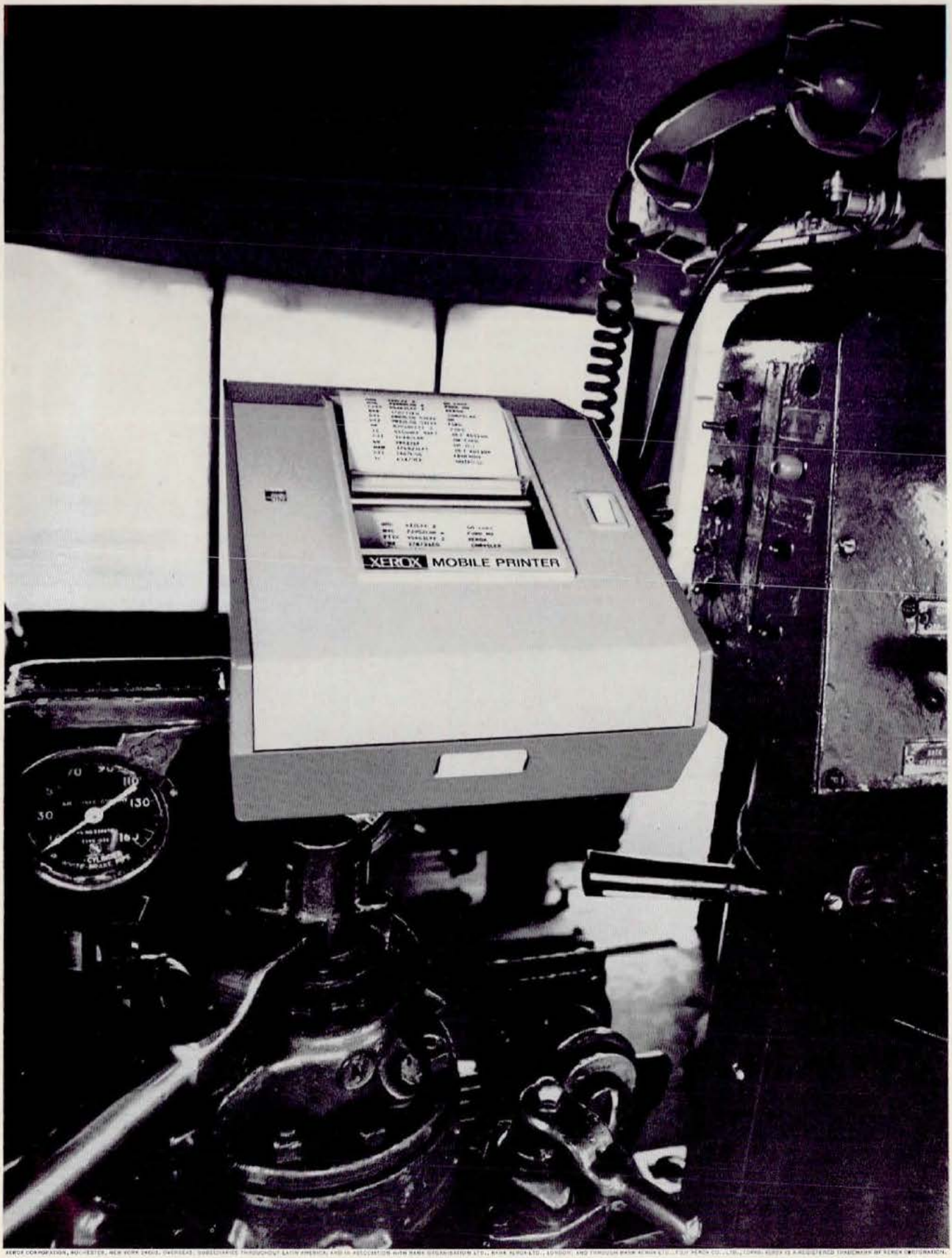
MEMBER RPI




Abex retarder locations at Balmer Yard.

Abex Economatic Yard installation at Balmer Yard, showing 16 class tracks with car heading into first of three retarder-equipped groups.


XEROX MOBILE PRINTER

# A secretary in every engine?

An engineer has a lot of things to look at and listen to without being distracted by some radio voice. That's why Xerox will soon have a better way to get the message.

The Xerox Mobile Printer. It will silently, quickly (280 words a minute) print accurate, clear records of every message sent.

Hooked up to any two-way radio, it can record switching instructions and car movement information. And can even transmit the same data automatically to the caboose. If the engineer has to leave the cab, the Mobile Printer will just keep on recording.

For more information on the Mobile Printer (soon to be available), call T. Brimer at (716) 442-1810 or write Xerox Corporation, Dept. MLP, Rochester, New York 14603.

Meanwhile, you can see it at the Association of American Railroads Show, Signal and Communications Section, Montreal, September 15-17.

It's one secretary that will work for you on the railroad all the livelong day.

XEROX

Circle 36 on coupon page 52

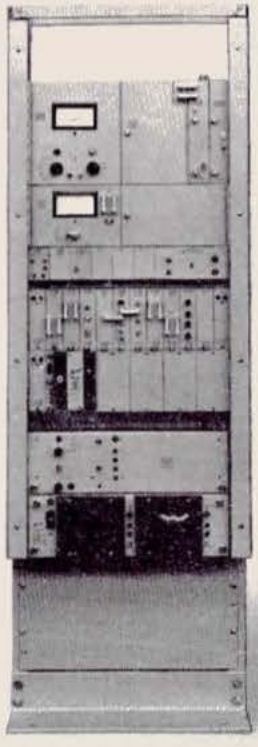
# "Just tell'em if performing microwave

When we asked one of our engineers what we could say about our 78B microwave system, he told it like it is.

But we'll tell you a little more.

First of all, we made the 6-GHz 78B a carefully considered blend of state-of-the-art advances and proven techniques. To give you the best possible performance. Day in and day out. For a few channels or 420 channels.

When it comes to new technology, the 78B has its share. Like a receiver that's all solid-state for reliability.



# they can find a better system, buy it."

And waveguide filters that are all but independent of temperature for better stability.

To get the best transmitter performance and stability, we went with an improved temperature-compensated klystron. (There still isn't a proven substitute on the market that out-performs it.)

And we didn't ignore an important fact of life: maintenance. When our quick-change transmitter klystron needs attention, all you replace is the electron gun. The cavity stays tuned. Instead of several hours, you're back in operation in about 15 minutes.

Then there's the convenient built-in meters and coordinated test points. They make the 78B easy to line up, test, and troubleshoot.

All things considered, the way our engineer told it makes a lot of sense.

And so does the 78B.

Lenkurt Electric Co., Inc., San Carlos, California.

LENKURT ELECTRIC
GENERAL TELEPHONE & ELECTRONICS

## Microwave Systems from Lenkurt

MEMBER RPI

# (B) WE CAN DO IT!

Of course you know Buckeye. Or do you?

Do you think of us *first* when you need creative design engineering?

Do you consider us *the* source for dependable, economical, on-time production of more different underframe components than any other manufacturer?

Today, with new equipment such as the industry's largest squeeze molding machine, we make every kind of railroad casting—faster, with greater accuracy and better quality.

Engineering? We've probably designed more new and improved underframe parts and components in the last two years than any other manufacturer.

Ask the man who wears this badge to prove it.

Whatever your problem, *We Can Do It* at Buckeye Steel Castings.

Circle 38 on coupon page 52

# "This just came by phone"

The document in this secretary's hand was thousands of miles away, or across town, just minutes ago. Her phone and Magnafax® 850 can put it in your hands *now*. Magnafax 850 makes the talk telephone the print telephone. Transmits any document. Actually receives on ordinary paper. You rent Magnafax 850 for a couple of dollars a day. Installation? Plug it into an electric outlet. Like the girl above, your secretary can operate it without training. For a demonstration in your office, send a short note on your letterhead, or call. Magnavox Systems, Inc., a subsidiary of The Magnavox Company, 270 Park Avenue, New York, N. Y. 10017.

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Circle 39 on coupon page 52

## Data Systems Division meets in San Francisco

The fifth annual meeting of the Data Systems Division, AAR, to be held Sept. 22-24 in San Francisco's Hilton hotel, is concerned with management involvement in management information systems. A brief outline of the program:

"Total Management Involvement," by B. F. Biaggini, president, Southern Pacific.

"Information Needs of Various Levels of Management," by R. G. Edwards, business systems manager, Bell Telephone Laboratories.

"BART—A New Dimension in Urban Transit," by A. C. Anderson, president of the board, Bay Area Rapid Transit system.

"How to Motivate Management to Use Management Information Systems," by R. D. Spence, assistant vice president-systems operations, Southern Pacific.

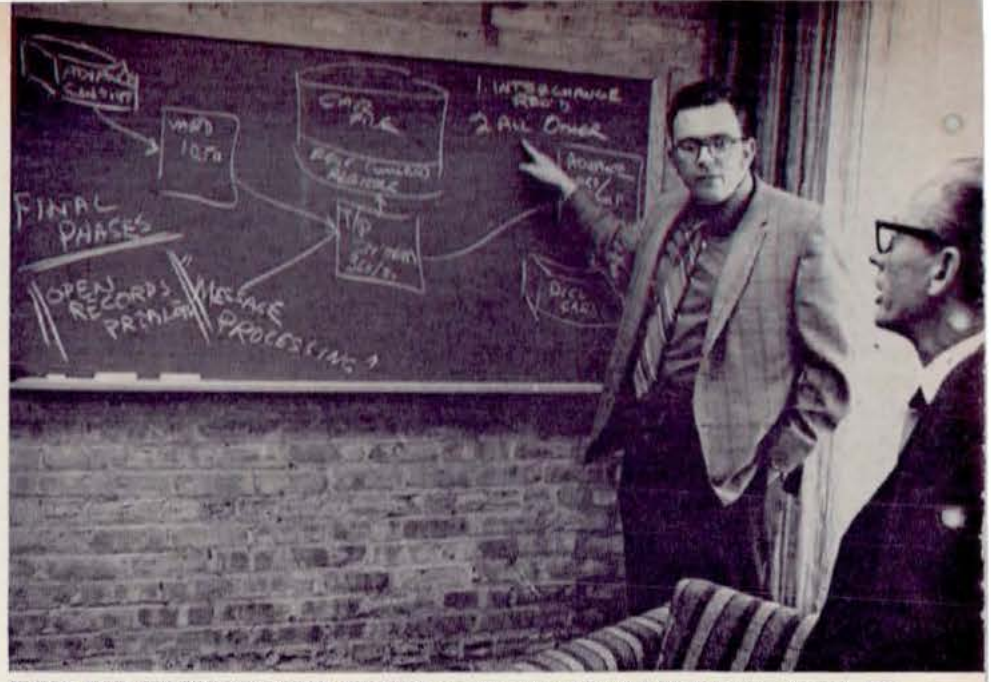
"Motivation of Management Personnel for Effective Use of Management Information Systems," —panel discussion: Moderator is L. H. Scott, assistant vice president-systems & information services, Seaboard Coast Line. Panel members are: J. R. Sullivan, vice president-marketing, Penn Central; E. R. Craven, general superintendent-transportation, Burlington; P. F. Osborn vice president-law Seaboard Coast Line.

"Management Obsolescence," by M. M. Christy, president, Western Pacific.

"What Changes Are Required in Management as a Result of Computers?" by J. T. Garrity, managing director, McKinsey & Company, Inc.

"Effect of Management Information Systems on Industrial Management,"—a panel discussion. Moderator is F. E. Kriebel, vice president-traffic, Southern Pacific. Panel members are: P. J. Wellnitz, distribution manager, Union Carbide Corp.; J. J. Brunner, vice president-financial, North American Rockwell Corp.; F. F. Mautz, manager purchases and stores, Pacific Gas & Electric Co.; and A. T. Smith, director, business systems, Weyerhaeuser Co.

C&S Section concurrent workshop sessions will be held on interroad procedures and data exchange; analytical techniques; standards and coding structures; systems and data communications equipment; ACI, and shipper-carrier data systems.




**IDEAS FOR TELEPROCESSING SYSTEM** are discussed by Art McKechnie (right), IC's systems design director, and Mike Metz, assistant director-operating systems.

# IC's big leap ahead in data systems

**Late-starting IC built on the experience of the early starters —then introduced its own approach to problem-solving.**

Art McKechnie is an intense individual—most often enthusiastic, sometimes disconsolate, and almost always a man who prefers to talk (for the record, at least) more about accomplishments than about plans and hopes. As director-methods, system designs and programming for Illinois Central, he's riding not one but two tigers—one representing the all-star cast which runs IC, the other representing the eager staff which puts the systems together.

The "tigers" get along well, which may be a tribute to all concerned. IC has indeed assembled a staff of all-stars, but one which seems to operate as a team. Mid- and lower-echelon people express both amazement and pleasure, at the way the road's top officers—all strong personalities—agree on priorities.

At the same time, McKechnie has organized a project group with its own tigerish tendencies. These youngsters love to talk about what they've got in the works, coming up next. (Some of them have even been known to turn down much-better-paying jobs with other companies. And they cite such intangibles as "the kind of environment we have here" as a factor which can override the lure of the green stuff.)

● **On the way up.** The sum of all this is that, in the data-systems area, Illinois Central has gone from laggard to leader in a very short time. Among the moves IC has made:

—It has made the big leap into third-generation computer equipment in a hurry. By so doing, it has taken an individualistic approach to problem-solving while still benefiting from the experience of other, earlier leaders in the railroad and other industries.

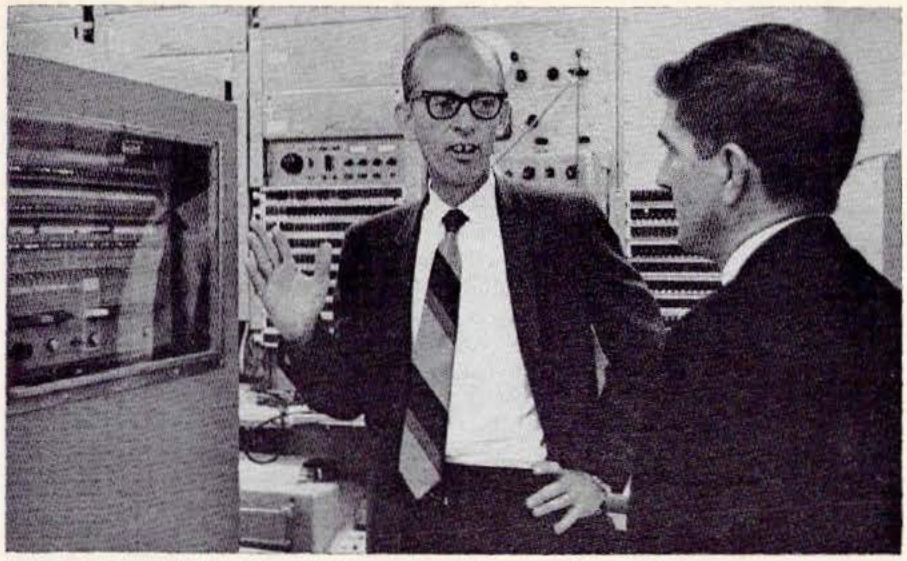
—It has taken the building-block concept of computerology and refined it so that new data-systems capabilities fall into logical and economic sequence.

—Its highly successful teleprocessing data-collection system is in its second year and running more smoothly every day, handling tremendous message, inquiry and record volumes.

—It's working now toward full development of systems designed to answer an age-old railroad question: How can car-utilization be improved? New, somewhat radical car-distribution approaches are already having impressive effects. And what's working now is just a beginning.

—It's already drawing the attention of experts in TOFC/COFC control for

**ALWAYS, THERE'S A CHECK** on progress—as McKechnie (right), and Dom Violante, assistant director-business systems, take a reading on the project-control board.



**NERVE CENTER** for IC teleprocessing system is this control area in computer-operations center. Present are McKechnie and Les Imbery (right), director-data processing. The system handles huge volumes of messages, inquiries and records.

**ONE OF THE BIGGEST BENEFITS** from IC systems work may involve car distribution. Discussing the problem are (left to right), McKechnie; R. H. Paschal, general manager-car control; and S. J. Cox, assistant director-planning and development. Entire IC fleet is to be covered.

the two-out-of-three-phases which have been implemented in a system of total intermodal equipment/marketing/accounting information and control.

—It has installed a system microwave communications network, to support all this and to take the place of a limited-capability Teletype and phone system suited only for a more leisurely era of railroad operation.

● **This way or that way?** McKechnie will point out that there are two basic ways to attack systems work: "One is to organize a committee to develop approaches to solving a major problem. Then this committee goes on to get authority to develop a master plan, which takes years to implement. In addition to being expensive, there is a problem in time-lag. By the time you implement the plan, the state of the art has changed or the nature of the problem itself has changed. Your approach is wrong or, at best, half-right. The other way is to organize the basic information requirement and move to collect all the elements of it in a way which makes a basic system quickly and economically feasible.

"The problem with this approach is that there are amazingly few people with both the insight to identify the nuts-and-bolts kinds of things you need to solve existing and future problems, and the guts to defend the approach. You know, we put the basic MAIN concept together here in roughly 48 hours: George Pipas on communications, Bill Thompson on operations, Dick de Camara and myself leading the effort. That was in early '67, and we haven't needed to change a single basic concept yet."

● **Working with the users.** IC's systems-design director is also constantly concerned with user-acceptance and how to get it: "No system is a system until it has user-acceptance—and I mean enthusiastic acceptance, not the kind where a user will say 'Well, I guess it's OK.' If the user is dissatisfied, any way you cut it, you're wasting dollars, his or yours. A lot of problems have no business being on a computer. Or maybe the user isn't in position to use what you're giving him. Maybe he isn't emotionally prepared for change. Most likely, the systems department just hasn't developed a system that sells itself to the user. When you come right down to it, the system itself should motivate the user by not un-motivating him. Because even if a system has benefits which the user can recognize, it's going to fail if at the same time it creates problems for him."

As McKechnie sees it, there are only two kinds of problems which should concern the computer. One is the high-volume, repetitive processing job. The other is the complex logic job, involving problems with complex and changing situations, where the computer has to wade through detail to produce the raw material for decision-making. But, McKechnie says, "You know, we spent the first 10 years we had computers doing the former, and we computerized everything but the wallpaper—too often ignoring either the volume requirement or that of repetition."

● **Variables are vital.** Railroading, he'll say, is basically an inventory problem—but one with an infinite number of permutations and combinations which affect decisions. How can the computer help? "Because of the vast number of ways in which things can fall together —the large number of variables—it's silly to think you could ever have line managers who were good enough chess players, 24 hours a day, seven days a week, to prevent costly mistakes. This is one area where the computer can be an invaluable helper."

IC's angle has been to involve users from the start of development of data systems affecting them. There has also been a good amount of cross-pollenization: Many of the top operating officers, for instance, have data-systems experience, including Vice President-Operations W. H. Thompson. Many of McKechnie's staff people have a background in other departments, including operations.

Using departments know what's go-

# IC IS BOTH REDUCING COSTS AND INCREASING GROSS

ing on—and theyre all for it, to the extent that the data-systems-design people are hard-pressed to keep up with the demand.

● **Traffic's experience:** Take a man like James E. Gardner, manager-freight sales. Only recently assigned to Chicago, Gardner well knows what it used to be like out in the field when a tracing inquiry came in: "We would get off a Teletype message to division headquarters or to Chicago. Maybe we used the company phone, or if we had to, we used commercial telephone. Now when we get a call, we've got the man's answer back while he's on the phone, either a last-reported-move or a full record on the car."

Customers aren't restricted to calling IC offices for car-location information. There is direct Telex and TWX inquiry. And IC is now making daily CLM reports to 126 shippers automatically, on their own or assigned cars.

(Gardner, as it happens, is a real customer's man: He takes satisfaction in knowing that "the little fellow down in Florida with one car to worry about can call our Miami office—hundreds of miles off our line—and get an answer back while he waits." He also is aware that "even if for some reason we're giving bad service, it's better if we can tell the customer what to expect—plus, now there's a capability that we can know about a bad situation which may be developing in time to do something about it.")

● **Next-up: Car distribution.** Computerized car-location systems, however, are a dime a dozen in the industry. IC's new contribution is in the area of computerized car distribution. A good beginning has been made—and the follow-up should be great.

The figures alone are impressive: The annual rate of improvement in the per-diem account has already reached $2 million, and the percentage of orders filled is showing dynamic improvement. The new capability, in other words, has been designed so that IC is both reducing costs and increasing gross with one integrated plan.

In essence, the car-distribution concept is one of central control and decentralized distribution.

Central control comes from Chicago, through the office of R. H. Paschal, general manager-car control. Decentralized distribution is through regional car distributors which IC has set up at Markham Yard (Chicago); Memphis; Jackson, Miss.; Champaign, Ill.; New Orleans; East St. Louis, Ill.; and Waterloo, Iowa (another distributor at Paducah, Ky., handles only open-tops for coal loading).

For reporting purposes, IC has been divided into 18 geographical nodes (seven of which are major terminal points and are further split). A daily early-morning print-out for Paschal's office and a transmission to each regional headquarters show status reports in six categories for each node. Reports include empties on hand, cars placed for unloading, empties en route, loads en route, empties destined offline and empties placed for loading.

● **What's ahead?** At present, reports cover principally specialty cars, though the soft-ware-type system capability now exists for control of all cars. That comes next. When Paschal decides he's ready to take-on the 40-foot box car, for example, he tells the computer via his control deck and next day out pops the report in printed form for headquarters, and automatic wires for each region.

Assignments are made, based on orders, by fleet managers in each car category. Cars specifically assigned for future loading appear on the morning report under a "CD" (car distributor's) heading—and they're untouchable, once assigned. All status categories are carefully scanned—with cars-placed-for-unloading getting perhaps the closest scrutiny, as IC tries for maximum car utilization by getting load assignments for cars while they're still being unloaded.

Quite naturally, a check system is needed. As one traffic man puts it, "There's thievery even among friends—or maybe especially among friends." IC is determined that cars CD'd will not be diverted or otherwise stolen en route to a loading point. A companion daily CD-exception report shows cars which were CD'd but did not move within 24 hours, CD cars on which the assigned destination does not agree with the actual movement destination, and CD cars which are placed at other than the assigned shipper. IC people are quick to say that a CD'd car placed wrongly for loading will not be yanked away from its wrong loading site—but whoever turns out to be responsible for overriding car-distribution orders can count on a rap across the knuckles for his action.

● **Then, a full system . . .** Surveys for the next step are being taken, to try to set trends—to develop data on number and type of cars needed, loading and unloading cycles, even such details as siding capacity. IC's plan is to have cars available before the shipper has to call and scream for cars—and to let the customer know precisely, by initial and number, what cars will be his and when they'll be spotted. For small shippers, this information will be obtainable from the regional car-distribution people. For big shippers, needing many cars, calls can be relayed to the equipment control department in Chicago.

At the same time, IC is working on a terminal-performance system (which is now scheduled to go on-line about Oct. 1), as an adjunct to its already operative and extremely flexible service-evaluation system. IC is patterning this move after the TPC system developed by Great Northern (RA, June 17, 1968, p. 18), with simplifying refinements.

In these operating areas especially, systems-design people stress the need for close liaison between systems builder and systems user. For the equipment control department, for instance, there's a control-systems manager who functions as the go-between. His expertise (on top of an operating background, he programmed for McKechnie for two years), plus that of the systems-design staff, provides for a double evaluation of program requests.

McKechnie's project managers will also point out that Operating Vice President Bill Thompson has been closely connected to operating/transportation

(*Continued on page 100*)

## IC talent is homegrown —and acquired

From an organizational standpoint, IC's setup is more diversified and at the same time more unified than that found today on many roads. The short-term payoff from the structure is already pretty amazing, IC people believe.

At the top, IC has Richard P. deCamara, vice president-administration. Its Communications and Computer Services Department is headed by George Pipas, as director. Within C&CS are four areas with specific responsibilities—Data Processing, with L. S. Imbery as director; Methods, Systems Design and Programming, headed by McKechnie; Communications, run by J. C. Taylor; and Data Control and Station Operations, headed by L. T. Coyle.

As in many areas today on IC, there is a blend of homegrown and acquired talent—the "acquired" represented by deCamara, ex-Frisco; Imbery, ex-Milwaukee; McKechnie, ex-Louisville & Nashville, and Taylor, ex-GE.

# ACI and TRAIN race Jan. 1 deadlines

## TRAIN is on time, so far—and half of the car fleet has ACI labels.

Two of the AAR's major current projects—automatic car identification, and the Tele-Rail Automated Information Network (TRAIN)—are now moving on, or close to, schedule. Both face Jan. 1, 1970, deadlines. TRAIN is to be operational by then, and the freight-car fleet is to be equipped with ACI labels.

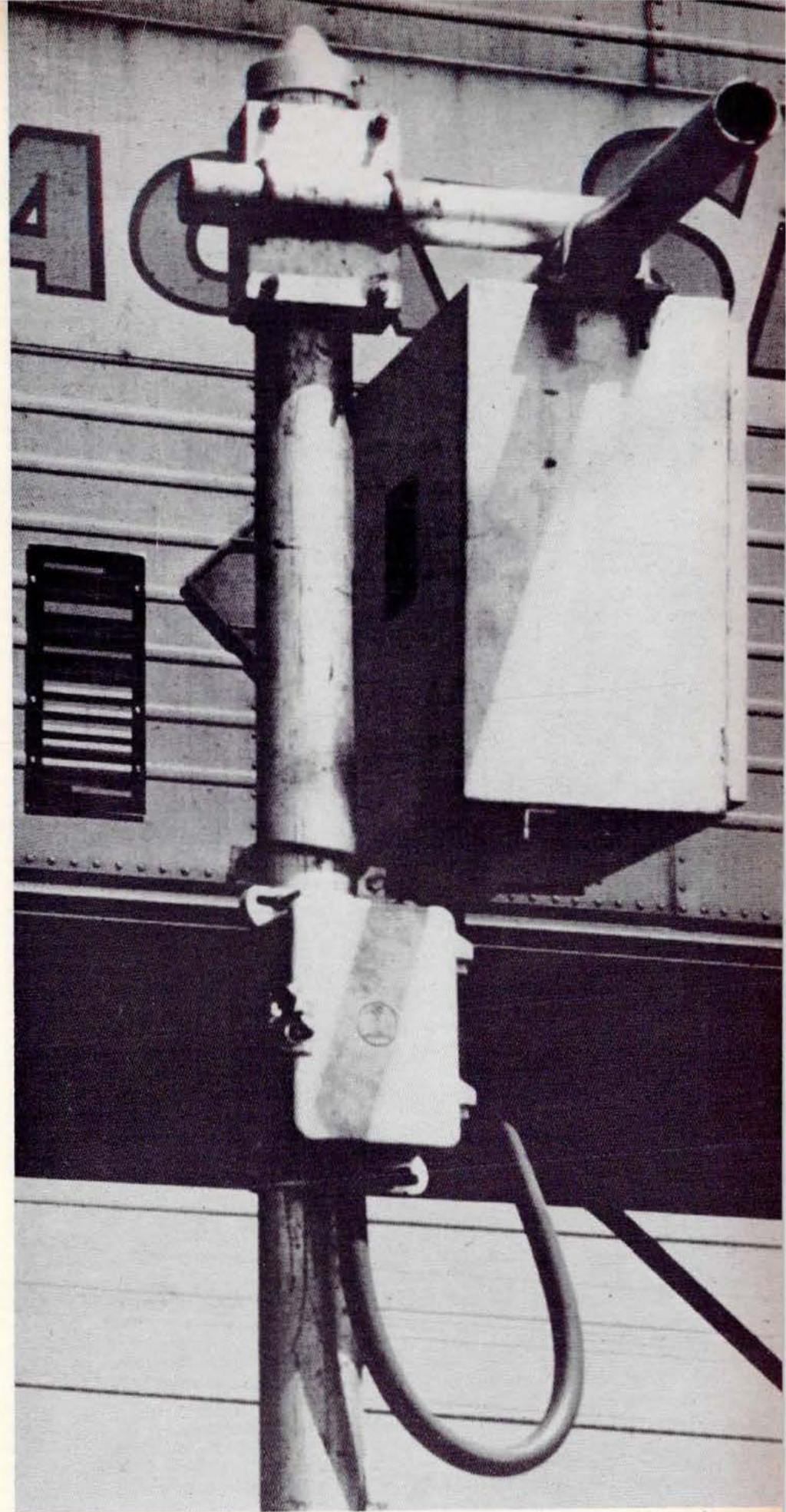
According to AAR sources, TRAIN is on time. Eight railroads are now sending interchange/delivered data to AAR's computer in Washington. Indications are that all 65 roads participating in TRAIN will have their communications terminals in time for them to be transmitting data to Washington by Jan. 1.

● **Programs tested.** Programming is well along. Programs concerned with data-collection have been tested. Recently completed was an operational test: Reception of incoming data, performance of necessary but routine edits before placing on disk files, and preparation of the proper outgoing messages regarding the incoming data.

Part of this system testing is concerned with checking of the logic functions. For example, a route is developed to determine if in fact a particular car can physically be interchanged at the point reported.

TRAIN uses three American Telephone & Telegraph Co. Wide Area Telephone Service Lines to communicate with the headquarters of the 65 participating railroads. Daily transmission of records of all cars delivered in interchange to connections and cars received from non-reporting roads or switching companies will be made.

● **Computer polls.** Communication is initiated by the TRAIN computer by dialing. At specified intervals, the telecommunications program automatically dials the data terminal at each railroad in turn, to collect the interchange data to be reported and to



**SYLVANIA'S KARTRAK** automatically identifies and tabulates piggyback trailers as well as freight cars as wayside scanner reads reflective labels.

# TRAIN WILL MONITOR MOVEMENTS OF 2 MILLION CARS

furnish responses to data-collection and inquiry messages previously received.

Car-movement volume is the criteria for selecting the type of data-transmission terminal to be used in TRAIN. For railroads reporting 800 or fewer car movements per day, data terminals to be used are Teletype ASR 33 and IBM 1050 units. AT&T Data Speed 5 and the IBM 2780 equipment will be used by roads reporting over 800 car movements daily. Transmission from paper tape will be used for the ASR 33 and the Data Speed 5, while the IBM 1050 and IBM 2780 units will transmit from punched cards.

A sampling of roads' preferences for data-transmission terminals shows that six will use Teletype ASR 33 (100 words per minute), 13 will use IBM 1050 (150 words per minute), four will use AT&T Data Speed 5 (750 words per minute), and 22 will use IBM 2780 (1500 words per minute).

● **Interchange data.** Interchange reports will contain the date, time, place and the names of the two railroads involved in the movement, a car record for each car, and a summary record containing a count of the cars covered by the report. Corrections to previous entries will also be reported, but will be transmitted in separate messages.

The computer will process the data once a day, posting the movements and corrections to the Car Location Master File. This master file will contain a record for each of the approximately two million U.S., Canadian and Mexican freight cars to be recorded in UMLER (Universal Machine Language Equipment Register). Each record will contain data covering the latest four interchanges of the car. Additionally, a history file will contain all interchange movements of a car during a given month.

Also, the system will maintain a file of railroad junctions (in Standard Point Location Code) and of all possible reporting marks and ACI numeric equivalents.

● **TRAIN reports.** Generated directly from the Car Location Master File will be reports of foreign cars online, car location statement-system, foreign and private cars, and semi-monthly revenue freight car location summary. These are tabulations of car location by car-type and ownership.

Special analysis of car flow through key gateways and a situation report will be prepared relating the various aspects of car allocation such as ownership, car inventory, loadings and unloadings, shortages and surpluses, by type of car and by railroad.

● **Moving ahead on ACI.** What about ACI? About one-half of the nation's car fleet now bears ACI labels.

Railroads have been labeling at the rate of 200,000 cars per month for the past several months. The latest official AAR report on cars labeled covered 673,562 cars, as of July 1. According to an AAR spokesman, roads have been slow in reporting their labeling progress to the Data Systems Division.

About 40 ACI scanners are now in service, and another 50-to-60 are on order with manufacturers. Most Class I railroads have made a study for the possible use of ACI, or are about to launch such a study. Several roads have made or are making system-wide studies, while others are considering major yards for ACI installations.

## Siting ACI scanners

A survey of railroads contemplating ACI systems shows that most will obtain at least one or two systems for test purposes. Majority opinion favors installing ACI equipment at yard entrances to obtain check-in and check-out of arriving and departing trains. These yard-check systems promise the most immediate payouts, or greatest benefits in least time, according to rail officers.

● **Terminal studies.** In addition to individual studies of major terminal areas, several studies are under way involving several railroads in large terminals. For example, the General Managers Association in Chicago is working on an ACI study covering 22 railroads which interchange over 17,000 cars daily at 35 locations. Over 100 scanners at these locations could be connected to a process-control computer to provide interchange data for the participating roads. Other large terminals—such as those at Kansas City, St. Louis, Peoria, Memphis and Buffalo—are under study or being considered for joint ACI systems.

The study-team method is being used by many roads to handle ACI planning and implementation. Members will include representatives of operating, signaling-and-communications, data-processing and industrial-engineering departments. Also important to this study team is a representative of an ACI equipment manufacturer.

● **What to take into account.** Key factors to be considered are these:

—The study team or ACI group should determine the need for ACI from an over-all systems concept as well as from the standpoint of requirements at specific locations or operating areas, such as yards and terminals.

—How the ACI-generated data is to be handled and processed is vital to a successful operation.

—An on-the-ground survey for determining locations of ACI scanners must be made. Records should be kept of all pertinent details of the site survey, such as power available, train speeds, signal-and-communications facilities and ACI equipment requirements.

—Cost benefit studies should be made for each ACI scanner location and for the ACI system.

—Installation and operation of ACI systems must take into account lead times for delivery of equipment and site preparation for the various supporting facilities.

—Evaluation of ACI systems after they are operational for several months is essential.

As with any new system or equipment, there is a period of debugging, and ACI is no exception. A survey of those involved reveals that careful attention should be paid to providing good voltage regulation from the power source, at the scanner site and good lightning protection.

● **Problems in labeling.** In labeling, special care should be taken so as not to reverse digits. It can happen, because people read from top to bottom, and the scanner reads from bottom to top. One railroad reading one side of a car with one scanner and the other side with a second scanner found cars having reversed digits in the middle of the label on one side only.

"We shall overcome" can be applied to railroads and the ACI situation. But taking into account the usual debugging problems of a new system and adding in the natural lag in reporting progress on labeling, it still appears that the active car fleet will be labeled by January 1970.

Many railroads will have ACI scanners in operation by that time, enabling them to really begin to evaluate ACI in a meaningful manner. Railroad opinion is that ACI will be used on a test basis for about a year, before system-wide implementation is begun. And as things stand now, ACI is here to stay. ■

# Hotbox sleuths map new strategy

**Prevention, detection methods come under intense scrutiny.**

Railroads are taking a new, close look at the whole problem of hotbox prevention and detection.

By the end of this year, U.S. and Canadian roads will have about 1,500 detectors in service. They have a wealth of experience with detection equipment, dating back about 13 years. But they show a hotbox record which, of late, has not been improving. On the contrary, mileage between hotbox set-offs has been decreasing.

Railroad people are quick to say that the equipment is not at fault. Today's new look at the problem centers more around such things as journal inspection practices, detector inspection and maintenance, detector location and operating practices with regard to stopping trains.

● **Hardware improvements made.** Actually, there has been considerable improvement in hardware—detector and communications and recording equipment, including solid-state devices, integrated circuits and better surge-protection units. These improvements are coming into use—often they're available as sub-assembly replacement equipment. But regular inspection and maintenance routines for detectors are still necessary.

On the mechanical side, concern is also evident. The AAR's Mechanical Division general committee, for example, has recommended that railroads repack unstabilized, unsealed journal boxes at 24-month intervals.

● **Placement under study.** Meanwhile, several roads are conducting re-evaluations of detector placement. A rule of thumb used by many roads has been to locate detectors 25 to 30 miles apart on line of road. Spacing near yards has followed two patterns—with detectors placed to scan inbound trains 15 to 20 miles out and to check outbound trains 25 to 30 miles from the yard.

On outbound movements, the theory is that if a journal is going to overheat, it will within about 30 miles. This has been borne out by experience. On inbound movements, the 15-20-mile spacing is a compromise from the early days of hotbox detection, when units could only scan trains moving in one direction. Now, with bi-directional scanning, the outbound detector can also scan inbound trains. Some roads still find close-in inbound detectors desirable, because from the detection point crews are usually able to pull into the yard and give attention to an overheated journal there, rather than to have to set out the offending car.

● **Locating detectors.** There are two general schools of thought with respect

## C&S men to exchange ideas on technology

Attendance is expected to top 1,000 this week at the ninth annual meeting of the Communication & Signal Section, AAR, scheduled for Montreal's Queen Elizabeth Hotel. Fifty-four railway supply companies will exhibit over $10 million worth of equipment and systems.

Major addresses will be delivered by J. A. D. Magee, commissioner, Canadian Transport Commission; E. P. Stephenson, vice president, Canadian National; and C&S Section Chairman H. R. Beck, assistant chief engineer-administration, CN.

● **Microwave.** High on a communications interest scale is microwave transmission. R. F. White, senior staff engineer, Lenkurt Electric, will discuss microwave system overloading and what can be done about it. J. L. Williams, manager reliability, Collins Radio, will talk about comparisons of predicted outage time for different microwave radio system configurations and varying path lengths. The effect of differences in absolute delay on the design of wide-band space diversity systems will be the subject of a paper by J. H. Bistrup, manager systems engineering, Farinon Electric.

● **Data communications.** Terminal considerations for design of modern data-communications systems will be discussed by D. M. Printz, marketing communication manager, and M. A. Pedote, regional sales manager, Teletype Corp. AAR's TRAIN project will be discussed by J. P. Gardes, manager, telecommunications system, AAR.

● **Outside plant.** A second look at lightning protection is the subject of a paper by Norman A. Bolton, advanced project engineer, General Railway Signal Co.

● **Rapid transit.** Controls for rapid-transit systems will be discussed by two speakers. T. R. Gibson, sub-project manager, central control, Westinghouse Electric Corp. will talk on BART central control. Also speaking on computer controls will be John Blake, project-design engineer, Philco-Ford Corp.

● **Signaling.** In the general area of signaling, new systems and equipment can provide sophisticated additions that make conventional operations much improved. For example, a CTC dispatcher can plan meets and passes more accurately and thus improve over-all operation if he knows the lengths of the trains moving over his territory. A train-length computer and car-locating package will be described by W. L. Geiger, general manager, electronics division, Erico Products, Inc. H. L. Hathaway, manager systems development, WABCO, will discuss modern train control systems.

● **Hotbox detector.** A panel will discuss hotbox detectors—operation and maintenance. D. H. Green, engineer of signals, Canadian National, is panel moderator. Members speaking include R. A. Howell, senior communications engineer, Southern; Bruce L. McNeill, Jr., engineer, signals and communications, Western Pacific; and Arthur J. Glazar, senior engineer, Servo Corp.

# GUIDELINES FOR LOCATING DETECTION EQUIPMENT

to locating hotbox detectors: (1) Place detectors where the largest number of hotboxes occur; (2) Cover all major lines with heavy traffic densities and all major yards.

Actually, many railroads started out with the first principle. However, as they found that they were just putting out fires in specific areas, and possibly not catching the majority of hotboxes, they soon became convinced that a system-wide program of hotbox detection would be necessary.

Some roads, and the number is growing, make an economic analysis of the traffic handled in the territory under consideration for hotbox detector installations. Factors to be taken into account include number of trains, type of traffic handled, value of this traffic including revenue derived from it, past history of derailments in the territory and the causes, geography of the line including availability of set-off locations.

It may be a case of balancing costs of detection equipment and operation against the costs of derailments and/or set-offs. This economic-analysis approach will probably gain favor because of the availability of computer-oriented research procedures for readily making such studies.

There is a high degree of agreement as to the specific location of a hotbox detector, once the general principle has been determined—say every 25-30 miles along a line.

● **Location check-list.** Detectors should be located where (1) there is tangent track; (2) a brake application is not being made; (3) they are accessible for maintenance; (4) a tie to existing communications is feasible; (5) there is a power source; (6) the roadbed is stable; (7) sunlight will not be a problem; (8) trains can be stopped without interference; (9) there are existing tracks that can be used for set-offs; and (10) the set-offs are accessible for car-repair forces.

● **Tangent track.** Generally speaking, most railroads agree that the hotbox detector scanners should be located on tangent track. Scanners should not be located where trains are normally in the braking mode. Heat generated from braking may cause a hotbox scanner to give a false indication.

A stable roadbed should be provided. Generally, scanners are mounted on separate steel or concrete foundations so that train vibration will not be transmitted to the electronic equipment in the scanner. Some roads mount scanners on long ties. A new type of hotbox detector has been developed that clamps to the base of the rail and is positioned alongside the rail so as to view the rear of the journal box. However, the relative positioning of the scanner with respect to the track must be maintained.

Most roads have installed wood blocks or steel plates on each side of the scanner to prevent dragging equipment from damaging it.

For some railroads, where tracks run in an east-west direction, there may be a problem with sunlight in early morning or late afternoon falling upon the scanner. Normally, the scanner shutter is open only for the brief instant when the journal box is in the correct viewing position. Some roads have installed a pipe extension on the front of scanners to keep out sunlight.

## Stopping the train

Relative to scanner location is the point at which the train will stop if an overheated journal is detected. The train should not stop so that it blocks a yard entrance. Sitting on the approach circuits or actually in an interlocking should be avoided. Also, the train should not be stopped so that it blocks highway-railroad grade crossings.

● **Communications vital.** At this train-stopping location after the crew has been alerted about a hot journal, there must be communications available to permit contact with the dispatcher. He may inform them of the specific journal in trouble. Or, they may read a digital readout device in a wayside instrument house. In either case, the crew will have to contact the dispatcher to tell him what action they have taken.

Thus, it is apparent that some braking distance calculations must be made for each hotbox detector location. Accordingly, it is important to know the speed limits in the territory as well as the type of traffic, including tonnage of trains.

● **Relocate detectors.** Some railroads are finding that the locations picked for their first detector installations are no longer correct. One road has moved several detectors because a study revealed that they were missing overheated journals. In some territories, it is a case of running freight trains at higher speeds than when the detectors were installed several years ago. Other important factors include type of traffic, tonnage and types of bearings on the cars.

All of this means that a re-evaluation of hotbox detector location and spacing is essential as methods of train operation change.

A possible solution to many of these problems is a statistical approach. With the aid of the digital computer, considerable data concerning hotboxes—such as where they occur, where the car is set off, kind of car, weight, loaded or empty, type of journal, date of last inspection, type of inspection, how far traveled since last inspection—might be developed into meaningful information.

One approach for catching journals on-line before they overheat or burn off is to make use of on-line computing. A cost-benefit analysis could be made to determine economic feasibility. Without discussing the economics, it does appear technically possible to telemeter all hotbox detector data into a computer for instantaneous analysis. Comparisons would be made on each journal with the detector report of a previous scan. Hotboxes could be flagged immediately, and journals just beginning to heat up could be flagged for attention at the proper time.

● **Efficiency is misnomer.** Some railroads are concerned with efficiency of hotbox detectors, but it is incorrect to talk about hotbox detector efficiency. Unfortunately, it is impossible for a man to physically check an overheated journal when it is pasing a hotbox detector. Hence, it is possible for such a journal, say in cold weather, to be sufficiently cool by the time the train stops for the crew to report no overheated journal. Hence, efficiency, measured by the ratio of hotboxes found to the number indicated hot, will drop. Also impinging on efficiency are such factors as the threshold alarm setting of the detector, the skill of the person inspecting the indicated hot journal, and train handling in stopping.

Most railroads interviewed in a recent Railway Age survey of practices with respect to location and operation of detectors reported efficiencies running around 75-80%. Increased emphasis upon instructing train crews in detecting hot journals once indicated by a detector is reducing the number of false reports by detectors. One road is placing a small battery-operated heat source on the journal box covers for making spot checks to determine train crews' ability to find and report the correct journal once it is picked up by the hotbox detector.

Survey results indicate that hotbox detectors are performing very well, but it takes continuous vigilance on the part of operating, mechanical and signal and communications departments personnel to maintain good performance. ■

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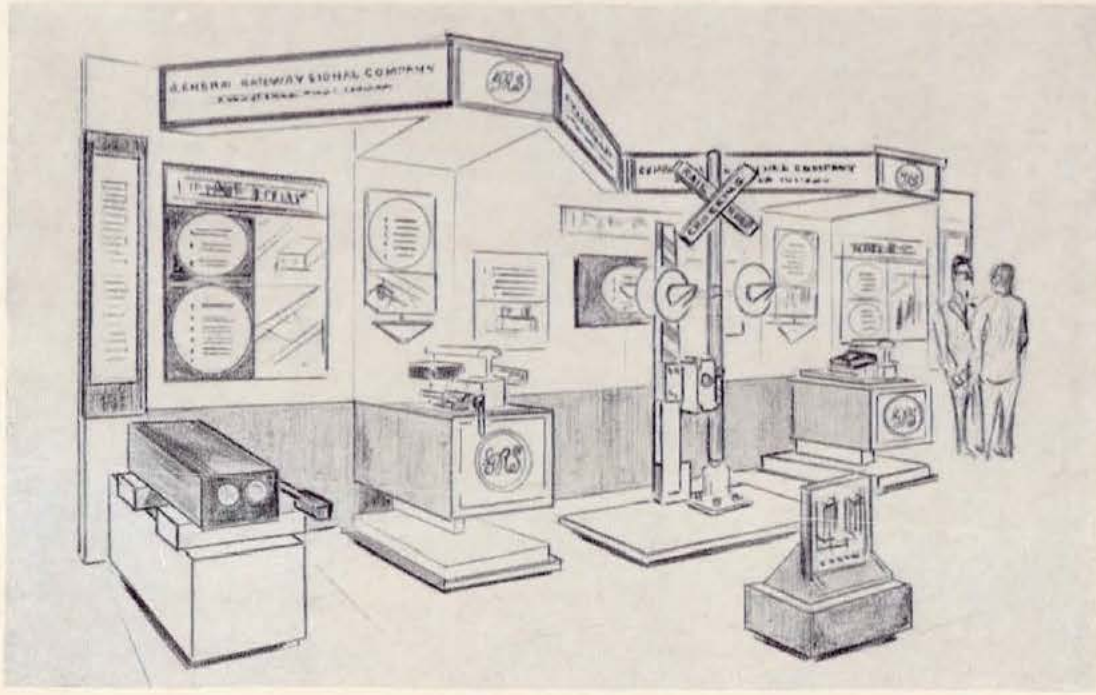

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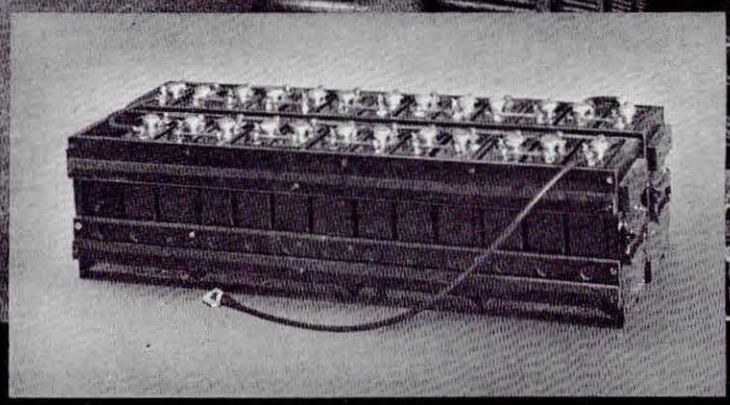
Circle 42 on coupon page 52

# The battery and ½



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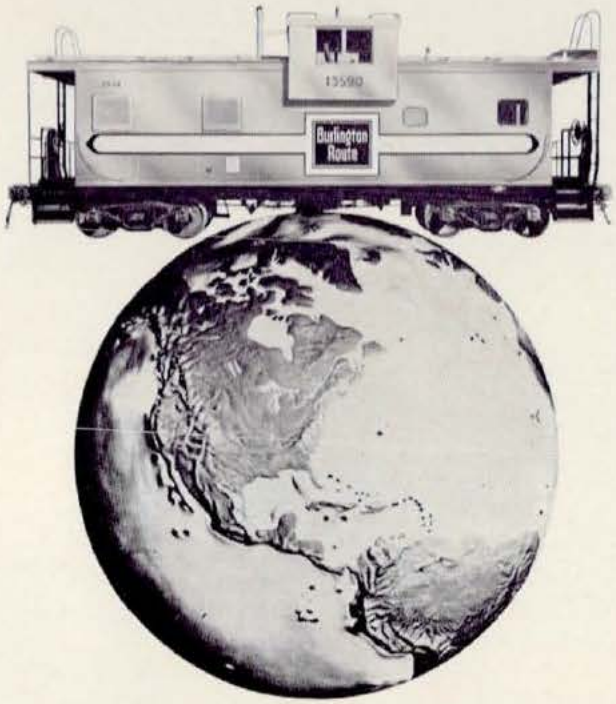


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John J. Maher
PC

Harold R. O'Connor
Unity Ry. Supply

# PEOPLE

**ASSOCIATION OF AMERICAN RAILROADS.—Roland Keefer,** special representative, named chief special representative, Freight Loss and Damage Prevention Section, Chicago, succeeding **John E. Roumillat,** promoted to director of the Section (RA, Aug. 18, p. 36).

**BANGOR & AROOSTOOK.—Edwin J. Berry,** general foreman, Derby Shops, promoted to shop superintendent, Derby (Me.) Shops, succeeding **Julian L. Perry,** who has retired as general foreman, car department.

**BESSEMER & LAKE ERIE—DULUTH, MISSABE & IRON RANGE—ELGIN, JOLIET & EASTERN—LAKE TERMINAL—UNION—Robert M. Hartwig** appointed senior engineer—operations research, Pittsburgh, Pa.

**BURLINGTON.—Bob L. Followell,** assistant office manager, general sales office, Chicago; **Glenn D. McKeighan,** foreign freight agent, Chicago, and **Daniel T. O'Brien,** sales representative, St. Louis, named sales managers, trailer-on-flat-car traffic, Kansas City, Mo., Omaha, and St. Louis, respectively. **Roger G. Robbins,** director of intermodal operations, appointed terminal manager, trailer-on-flat-car operations, Chicago.

**R. L. Davis** named district storekeeper, Chicago, to succeed **T. E. Henderson,** resigned.

**CHESAPEAKE & OHIO.—T. R. Horton,** district sales manager, Greenville, S.C., will retire Oct. 1, after 47 years of service.

**CHICAGO SOUTH SHORE & SOUTH BEND.—John R. Dukehart** appointed signal and electrical engineer, with responsibility for engineering, construction and maintenance of signal, fixed property electrical and communications facilities. **Robert F. Timm** continues as signal and electrical supervisor.

**DENVER & RIO GRANDE WESTERN.—J. B. Norwood, Jr.** named director of service planning and TOFC, Denver.

**ERIE LACKAWANNA.—Leo J. Slack,** assistant manager, industrial development, Hoboken, N. J., retired Aug. 31, after 38 years of service.

**Harold L. Johnson,** division sales man-

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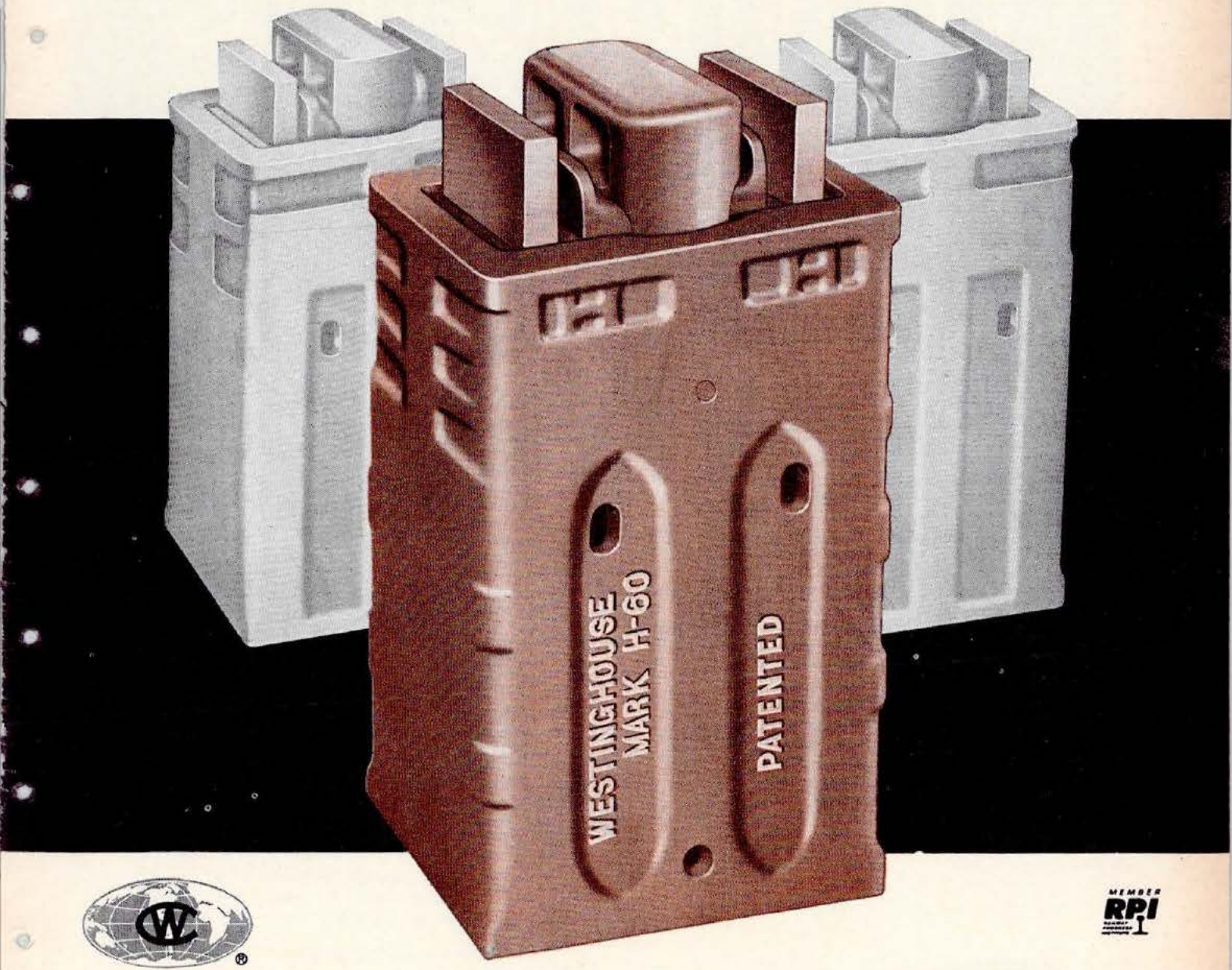


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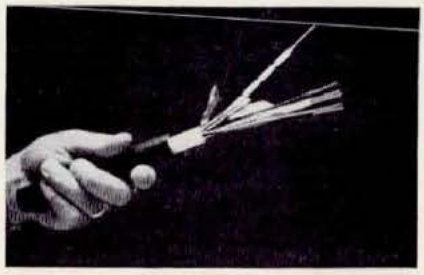
Circle 45 on coupon page 52

# How to lower the cost of railroad communications



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Circle 46 on coupon page 52

ager, Huntington, Ind., retired Aug. 31, after more than 47 years of service.

**GULF, MOBILE & OHIO.—Harold G. Johnson,** division traffic manager, Chicago, promoted to general sales manager there.

**GREAT NORTHERN.—V. C. Peterson,** assistant comptroller-taxes and insurance, retired recently after 40 years of service. **R. J. Molitor** named assistant comptroller-taxes and **M. M. Smiland,** director-insurance.

**E. G. Westby,** sales manager, marketing department, Seattle, named area sales manager there.

**T. N. Hemmesch,** trainmaster, Seattle, appointed assistant superintendent there, to succeed **W. L. Solga,** on leave of absence due to illness. Mr. Hemmesch's successor is **J. M. McFarland,** transferred from Shelby, Mont.

**ILLINOIS CENTRAL—C. S. Condor,** superintendent suburban services, Chicago, appointed director technical studies there.

**MISSOURI-KANSAS-TEXAS. — Ralph A. Douglas,** auditor-revenue, named general auditor, Denison, Tex., succeeding **Kenneth R. Langford,** promoted (RA, Aug. 25, p. 57).

**MISSOURI PACIFIC.—W. E. Bailey** named assistant district superintendent stations and claim prevention, Eastern District, Little Rock, Ark., to succeed **R. C. Turnbow,** named terminal manager **MP-Missouri Pacific Truck Lines, Inc.,** Corpus Christi, Tex. (RA, July 7, p. 53).

**NORFOLK & WESTERN.—John S. Bradshaw,** construction superintendent, Roanoke, Va., appointed general superintendent—construction, with system responsibilities.

**T. Kielborn** appointed TOFC terminal supervisor, Calumet Yard, Chicago. **V. Momkus** named TOFC terminal supervisor and **F. N. Janes** appointed assistant TOFC terminal supervisor, Landers Yard, Chicago.

**Glenn G. Mullins,** assistant superintendent, Roanoke Terminal, appointed superintendent, Shenandoah Division, Roanoke, Va., succeeding **R. M. Castner,** retired. **James C. Wright,** senior terminal trainmaster, Bellevue, Ohio, succeeds Mr. Mullins at Roanoke Terminal. **Billy J. Hoops,** terminal trainmaster, Bellevue, appointed senior terminal trainmaster there. **Harry E. Cumbow,** assistant trainmaster, Tipton, Ind., named terminal trainmaster, Bellevue. **William H. Burr,** trainmaster, Conneaut, Ohio, transferred to the Muncie Division at Tipton.

**NORTHERN PACIFIC.—F. Lynwood Steinbright,** vice president, executive department, Seattle, retired Aug. 31, after more than 28 years with the NP.

**PENN CENTRAL.—John J. Maher,** assistant vice president—labor relations, Philadelphia, promoted to vice president—labor relations and personnel, effective Oct. 1. Mr. Maher will assume the responsibilities of **Guy W. Knight,** senior vice president, who is retiring.

**John J. Grocki** named manager—market development—chemical. Mr. Grocki was formerly with the Franklin Institute Research Laboratories, Philadelphia.

**Jonathan O'Herron,** who joined the PC in June as vice president—accounting, elected vice president—finance (RA, July 14, p. 31).

**READING.—James E. Frick,** assistant general attorney, promoted to general attorney. **B. David Sigman,** attorney, promoted to assistant general attorney. **Joel E. Mazor** will join the Law Department on Sept. 15 as assistant general attorney, succeeding **Robert J. Williams,** resigned.

**RICHMOND, FREDERICKSBURG & POTOMAC.—E. R. Martin, Jr.,** manager passenger services, Richmond, Va., appointed passenger traffic manager.

**ST. LOUIS SOUTHWESTERN.—Jeff W. Hutcherson** appointed to the new position of general agent, Memphis, Tenn.

**SOO LINE.—Michael R. Logan,** trainmaster, Gladstone, Mich., named to the newly created position of assistant superintendent, Fond du Lac, Wis. Mr. Logan's successor is **B. J. Wilkes,** assistant train-


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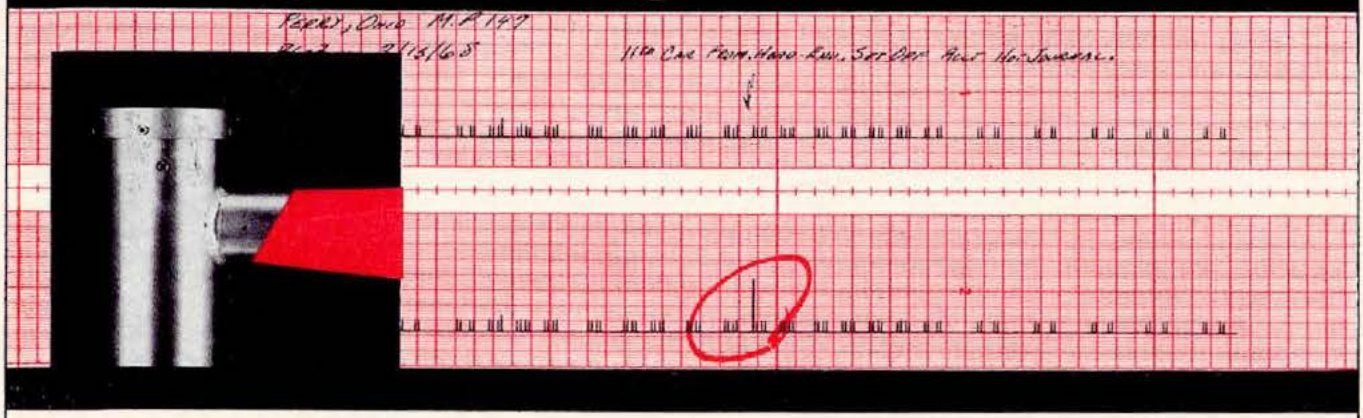

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master and agent, Neenah, Wis. **G. A. Gillette** appointed assistant superintendent, Central division, Minneapolis. Mr. Gillette was formerly trainmaster, **Delaware & Hudson,** Scranton, Pa. **Clifford C. Leary** named trainmaster, Stevens Point, Wis. **Harry W. Ellefson** named superintendent, Eastern division, Stevens Point, Wis., succeeding **Clayton A. Jacobs,** who becomes manager, training, operations, Minneapolis. **F. A. Godin** named manager, training, clerical services, Minneapolis. Mr. Ellefson's successor as assistant director of personnel is **John Benz. George W. Carr** named assistant to general superintendent, with jurisdiction over system train scheduling and blocking, and distribution of motive power, with headquarters in Minneapolis.

**R. C. French** named assistant district sales manager, Chicago, to replace **Walter W. Wyrembeck,** retired. **J. C. Kent** named assistant district sales manager, Winston-Salem, N. C. **William G. Hollman,** district sales manager, Philadelphia, retired.

**SOUTHERN PACIFIC.—D. G. Holmes** appointed assistant superintendent, Ennis, Tex. The following named trainmasters: **B. J. Ballard,** Houston; **N. G. Bulot,** Hearne, Tex.; **J. P. Leach,** Ennis; **C. N. McMurrey,** Lake Charles, La.; **D. L. Travis,** Lafayette, La.

**A. H. Walburg,** supervisor of car service, has retired after 44 years with the SP.

**TRAILER TRAIN CO.—F. D. Vandever,** general purchasing agent, Philadelphia, has been appointed director of purchasing and material management.

**TRANSPORTATION ASSOCIATION OF AMERICA.**—On Sept. 1, the New York Office moved to Lincoln Building, Suite 2232, 60 East 42nd Street, New York, N. Y. 10017. The phone number remains the same: 212-MU2-6983.

**UNIFORM CLASSIFICATION COMMITTEE. —William J. Fogarty,** member, appointed vice chairman, Chicago.

**UNION PACIFIC.—Bennett E. Buck,** assistant chief photographer, named chief photographer, Omaha.

## SUPPLY TRADE

**Harold R. O'Connor,** vice president sales, **Unity Railway Supply Co.,** has been named president. **John E. Resch,** manager sales–service, has been appointed assistant vice president of sales. **John R. McGrath** has joined the sales staff at Chicago.

**Charles S. Johnston** has been elected chairman of the board, **Transco Inc.** Mr. Johnston's successor as president and chief executive officer is **Howard S. Goss** (RA, Aug. 11, p.32.)

**Weldon J. Smith,** director of finance, **North American Car Corp.,** has been elected treasurer, to succeed **Adin C. Gray,** who retired July 31 after 31 years of service.

**Ted Harris** has been appointed general sales manager, **Transicold Corp. Bob Reider** has been named assistant general sales manager.

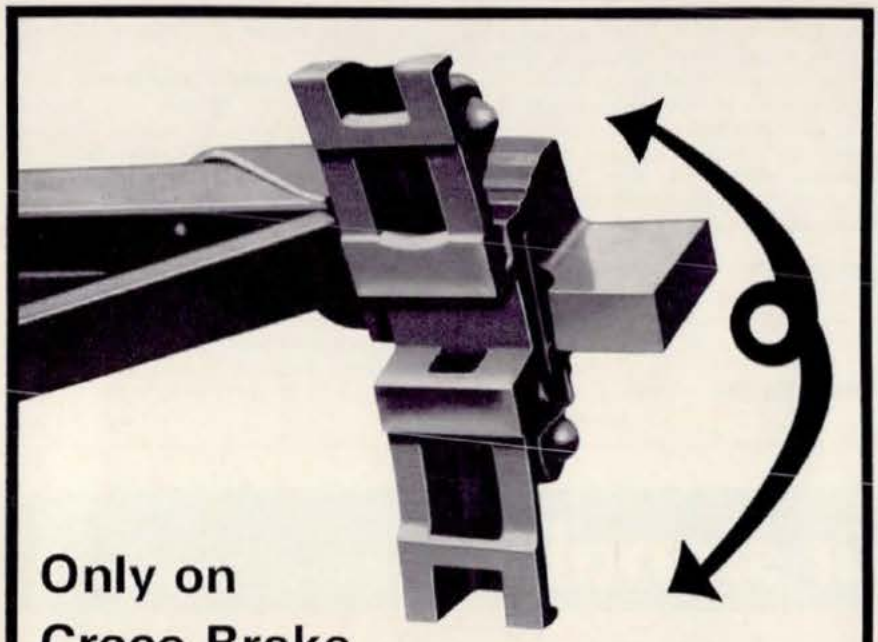
**Minnesota Railway Supply Co.,** St. Paul, Minn., has been appointed a new distributor to handle the Thermit Self-Preheat rail welding products of **Thermex Metallurgical, Inc.,** Lakehurst, N.J. **William Nordstrom** is general manager and owner of the new Minnesota company at 603 Pioneer Building, St. Paul.

**J. David Wylie** has been appointed district representative, **Carrier Air Conditioning Co.,** in Washington, D. C., for rail truck, container, marine and military equipment.

**System Analysis and Research Corp.,** Cambridge, Mass., has been acquired by **Boothe Computer Corp.** through an exchange of stock.

**Jerome Slater,** executive vice president, **CTI-Container Transport International Inc., New York** has been named president, succeeding **Thomas G. Newman,** who retired June 30. **Eugene R. Birchler,** vice president advanced to executive vice president.

**Milton Frater** has been named president of **G. B. Lewis Co.** and its parent company, **Container Development Corp.,** both located at Watertown, Wis. He succeeds his father, **G. Gordon Frater,** who will continue as an advisor.

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Only Creco Hangerless Type Brake Beams have brake heads reversible left-to-right, top-to-bottom. When one side wears out, just reverse the heads and life is doubled. And, since each head is either right or left, you only need half the inventory required for ordinary, non-reversible, brake heads. Creco strap-type tension member also eliminates need for threaded rod and nuts.

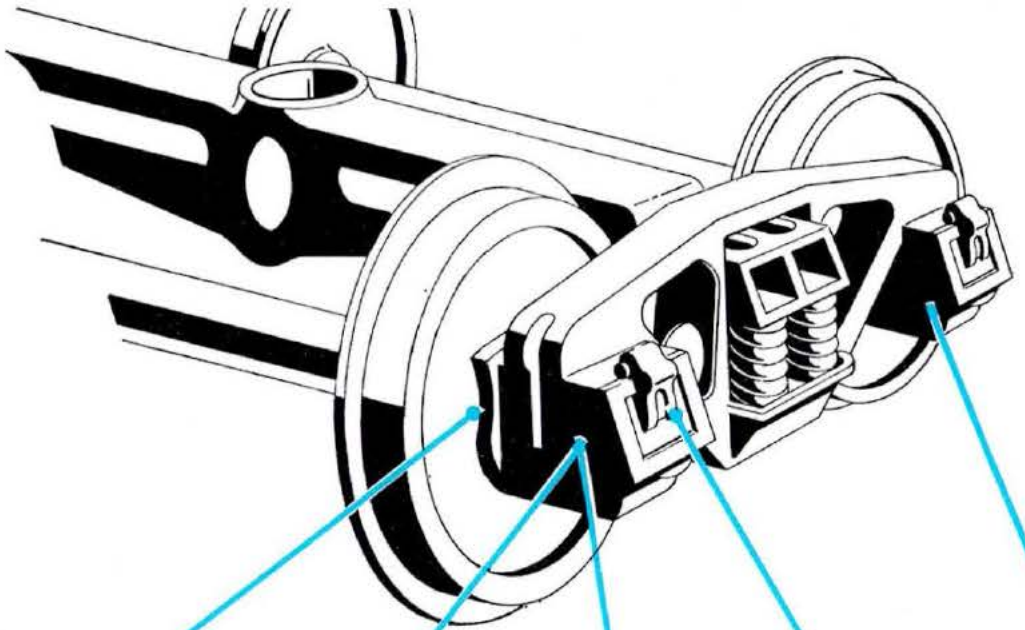
**All brake beam parts renewable. No stronger brake beams on the market. Backed by 77 years' manufacturing experience: "The Standard of the Industry."**

**CHICAGO RAILWAY EQUIPMENT DIVISION**
EVANS PRODUCTS COMPANY
1928 W. 46TH STREET • CHICAGO, ILLINOIS 60609

Circle 48 on coupon page 52

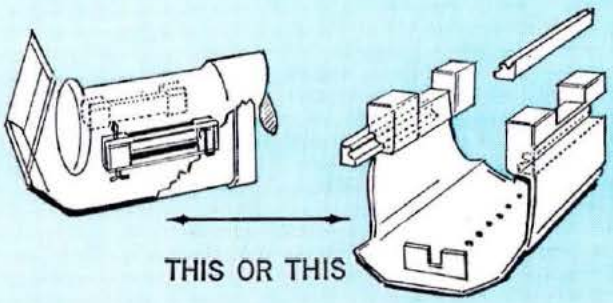
# UNITY

**. . . introduces its fine family of service-proven products to meet today's high speed and high capacity railroading with a careful eye on your budget. If you are budget minded (and who isn't), we offer you our economy family package at a substantial savings on all of these items.**



**ATLAS or PREMIER LUBRICATORS**

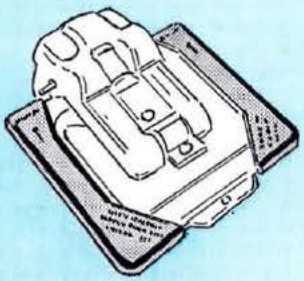
Service-proven "Robco" journal box rear seal; exclusive self-lubricating feature.*



THIS OR THIS

Type "W" Journal Stop, double and single contact, for welded installation.

Service-proven "Security" insert journal stop for use in rib or non-rib type.



Unity Snap-on Easy-Ply lid seal; improved; double seals all journal box lids.

## All Approved for Interchange Service

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Unity RAILWAY SUPPLY CO., INC.

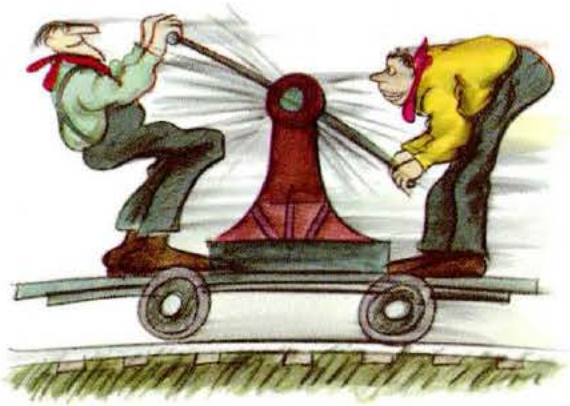
332 S. MICHIGAN AVENUE • PHONE 312—939-3438

CHICAGO, ILLINOIS 60604

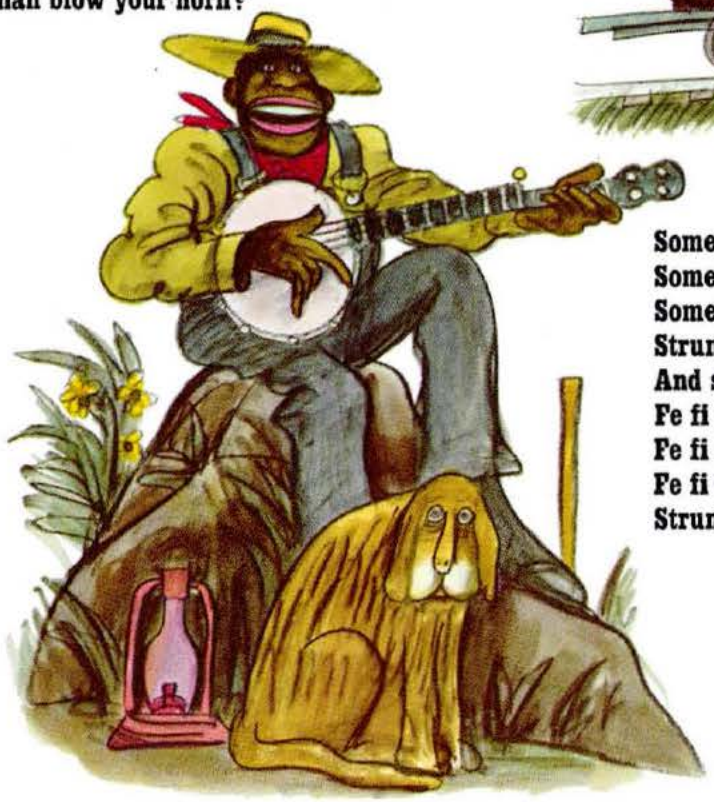
# I'VE BEEN WORKING ON THE RAILROAD

The source of this great old American railroad song is somewhat a mystery. It may be a genuine folk song or it may have had its origin back in the days of the tramp minstrel show. Most versions of the song, and there are many, reflect the arduous but colorful life of the railroad hand. We have chosen the most familiar version for this series...the one so often sung around campfires and wherever friends gather.

**I've been workin' on the railroad**
**All the live long day.**
**I've been workin' on the railroad**
**Just to pass the time away.**
**Don't you hear the whistle blowin'**
**Rise up so early in the morn,**
**Don't you hear the Captain shoutin'**
**Dinah blow your horn?**



GM
MARK OF EXCELLENCE



**Someone's in the kitchen with Dinah,**
**Someone's in the kitchen I know-o-o-o.**
**Someone's in the kitchen with Dinah,**
**Strummin' on the old banjo.**
**And singin'**
**Fe fi fiddly-I-O**
**Fe fi fiddly-I-O-O-O-O**
**Fe fi fiddly-I-O**
**Strummin' on the old banjo.**

**Dinah won't you blow**
**Dinah won't you blow**
**Dinah won't you blow your ho-o-orn?**
**Dinah won't you blow**
**Dinah won't you blow**
**Dinah won't you blow your horn?**

The rousing rhythm of "I've Been Working On The Railroad" captures, to a remarkable degree, the bygone era of gandy dancers and sledge-swinging work crews who challenged the frontier head on.

New Departure-Hyatt shares with railroad men this nostalgia for the pioneering past. Even more important, they share the railroads' dedication to pioneering for the future—to the finding of new, better and safer ways to diminish space and time on rails of steel. The advances that have already come from NDH have had a bearing on this progress—and the best is yet to come!

A full-color reprint of this advertisement, without commercial message, is available to you, upon request. If you'd like a reprint of each ad in the series, just ask. We'll send them to you as they are released.

**NEW DEPARTURE HYATT BEARINGS**

**Division of General Motors Corporation, Sandusky, Ohio 44870**

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**New ideas are the Stanray way of doing things**

# New X-panel roof provides greater strength under stress!

Twisting and racking are two of the greatest stresses a roof on a railroad car is subject to. The X-Panel Roof's strength lies in resisting these common stresses, due to the X corrugation configuration. Standard's new roof has panels 61½" wide instead of the normal 41", which results in approximately 33% fewer seam caps. It also means less chance of leakage. Install by welding or riveting (your option). ■ Why not contact your Standard Railway Equipment representative and ask about the new roof that provides greater strength under stress.

**STANDARD RAILWAY EQUIPMENT**
**division of STANRAY CORPORATION**
Hammond, Indiana • Chicago

# LETTERS

## Pilferage

Keokuk, Iowa

To the Editor:

The August 25 issue of Railway Age, page 68, reported on the problems of pilferage from railroad box cars and broached the matter of relocating the latch and locks on box cars to a higher level to make them more difficult to reach from the ground while cars are located in yards or on sidings.

We have not been aware of a particular problem concerning pilferage of our products from cars but believe this suggestion is worthy of detailed research. I have discussed the matter with our plant production people and have been advised that relocation would pose no problem for my company in loading cars at our plant. However, we ship to many hundreds of customers and have not taken the time to find out from them problems of unloading, although we feel that very few of them would experience difficulties with the higher located handles and latches.

I would like to take advantage of this letter to advise that one of my favorite features in the Railway Age is your Lines on Labor. I feel this keeps me quite well posted on the difficulties between rail management and rail labor and these are matters in which all shippers and receivers have a large stake. I feel the magazine in general is very informative and a definite asset to shippers and receivers as well as railroad people.

*R. L. Miller*
*Traffic Manager*
*The Hubinger Company*

Ringoes, N. J.

To the Editor:

Relative to your comments on pilferage from freight cars, I would suggest that the day of the car seal is past. In this era when stealing seems to be a way of life, not to mention increased vandalism and malicious mischief, it would seem that at least an interim partial solution would be to substitute padlocks for car seals with keys being forwarded to consignees through local agents. Raising locks to center of doors also seems to make sense, as would the installation of some type of battery powered burglar alarm on cars containing high class merchandise, set up to alert police if doors were tampered with.

*Samuel Freeman*
*General Manager*
*Black River & Western Railroad*

## Tomorrow's Railroads

Oakland, California

To the Editor:

I was most impressed with No. 8 in your "Tomorrow's Railroads" series (RA, Aug. 25 p. 33) which clearly defines the need for system transportation and an expansion of the inter-modal concept. I thought it a very objective and sober presentation which, hopefully, will reach enough people to stir the effort that is needed to bring this about.

*M. C. Crockett, Manager*
*Marketing Programs & Development*
*Kaiser Aluminum*

St. Paul, Minn.

To the Editor:

Your series, "Tomorrow's Railroads," should be required reading for everyone in the business! It is excellent.

*N. M. Lorentzsen*
*Vice President*
*Northern Pacific*


# NOW...underground cable for railroads
# H&M does the groundwork

Underground cable is now being laid by rail. Henkels & McCoy's new railroad plow features a unique vibratory blade, mounted on a flatbed car. The plow is effective even in tough terrain and narrow gorges . . . lays cable automatically, and requires minimum tamping to replace the disturbed ground.

Railroads are now taking advantage of this new, highly efficient communication development to eliminate costly overhead lines and to reap the benefits of underground cable uninterrupted by storms and other disasters.

See for yourself how this modern cable laying technique can benefit your company. Call or write for an early viewing of a 16 mm. full-color sound film.

# HENKELS & McCOY, INC.

H&M

**SYSTEMS CONTRACTORS**

**Jolly Road, Blue Bell, Pa. 19422, 215-646-8000 / *Operations centers coast-to-coast***

Circle 51 on coupon page 52

# LETTERS

## Passenger trains

Winslow, Arizona

To the Editor:

Once again the time-worn theory that any passenger train which more than covers its out-of-pocket costs is beneficial to a railroad has been resurrected by Mr. Kevin McKinney's letter in the July 7 issue. Thinking of this nature is disturbing, especially when it is hopelessly intertwined with emotionalism over the plight of the passenger train.

The implicit undertone of Mr. McKinney's letter is that railroad management has erred seriously in discontinuing so many passenger trains. Nothing could be farther from reality than this thinking. Does Mr. McKinney think any railroad management would willfully discontinue any railway operation which in any way made a contribution to net railway income?

The facts are very clear and obvious to all. It is no longer possible to earn a return on the capital invested in passenger train operations. Any management which chooses to operate passenger trains does so for one of two reasons:

(1) A sincere belief that passenger service can be provided so long as losses remain minimal, and that the net result of such is beneficial other than financially to the company.

(2) Inability to adjust or discontinue service because of interference from governmental agencies.

It is high time that those railfans who stand at trackside, weeping and wailing at the last run of "the limited," awaken to the fact that the name of the game is net railway operating income, and it is in fact the only determinant of success.

*Norman C. Orfall*

## The real problem: Service

Berkeley, Calif.

To the Editor:

Mr. William White of Consolidated Freightways makes some very interesting points in his interview [RA, June 2, p. 20], especially in view of the railroads' enthusiasm about intermodal systems as a panacea for all our problems. Mr. White has, in essence, given up on the railroads as a meaningful transport mode for all traffic except that of lowest revenue—products of mines and forests. While he may state that a meeting of minds would be helpful, he is really saying that railroads cannot face up to the real problem—service.

Pinning one's hopes on new hardware—containers, powerful engines, or whatever—is only self-delusion. Trucks have not enjoyed the hardware advantages that railroads have, but they do provide the service. I think the railroads' views on service are best shown by the small amount of interest in such developments as Reading's Bee-Line service or the D&RGW's short-fast concepts. We seem interested only in improving that which we are already doing well, with unit trains and bigger engines to pull "land barges."

*J. G. Fuller*

## Metroliner fares

Longview, Wash.

To the Editor:

One of your recent articles discloses the seemingly unusual fact that the typical Metroliner passenger is considerably richer than the average citizen. Considering how high the fares are, who else could afford to ride the Metroliner?

*Henry R. Korman*


SPENO

You Are on the Right

To Lower Maintenance Costs When You Use

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*"Just Ask the Railroads That have used us"*

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Montreal, 376 P.Q., Quebec
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Circle 52 on coupon page 52

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From Labrador to the Gulf . . .
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RAILWAY EXCHANGE BUILDING
TELEPHONE HARRISON 7-8257
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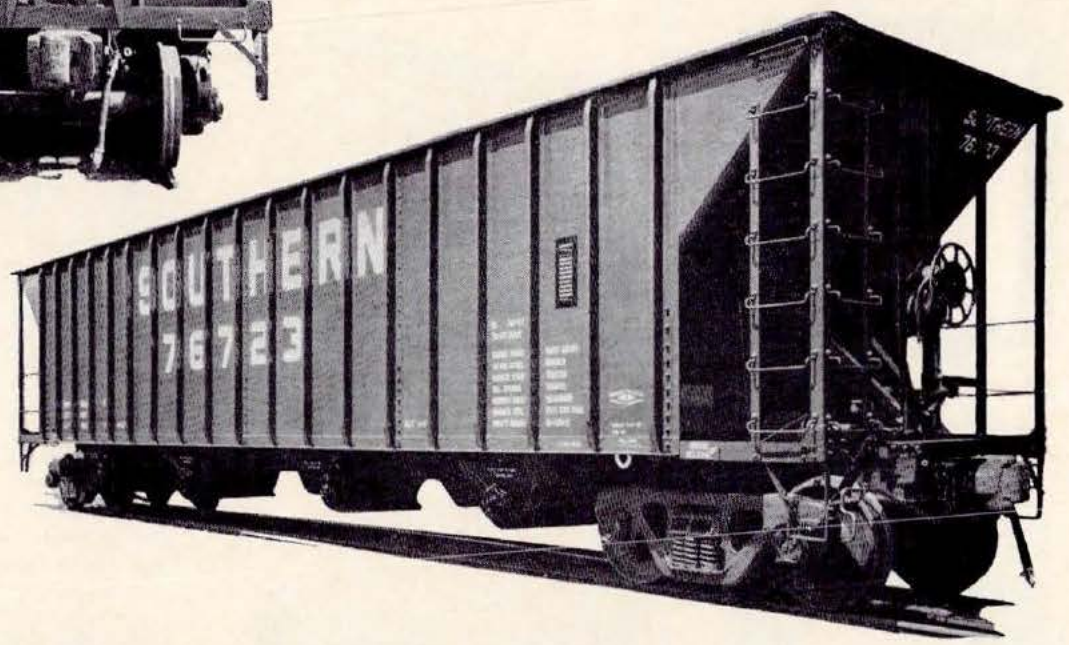
Circle 58 on coupon page 52

# SOUTHERN gives the green light to coal.

And these big Greenville hoppers help. Of welded design and riveted at the cross ridge and bolster area, with rigidized side sheets, these hoppers utilize high-strength materials throughout. Constructed so securely, the cars withstood a solid hour in the shaker without popping a single rivet or breaking a weld. The 45° slope sheets assure fast discharge through quadruple hoppers, with no hang-ups.

Hopper cars for unit coal train service or general duty have become a Greenville specialty. As the number of coal-fired generating stations continues to grow, an increasing number of Railroads, Utilities and Coal Producers have placed Greenville unit trains in service. Greenville understands the requirements and economics. If you're talking hopper cars for general service or unit train operation, your first step should be a call to Greenville . . . 412-588-7000.




**GREENVILLE** **STEEL CAR COMPANY**
*Subsidiary of Pittsburgh Forgings Company*
GREENVILLE, PENNSYLVANIA

Circle 53 on coupon page 52

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# UNBEATABLE COMBINATION!

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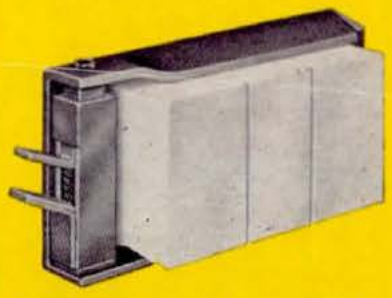

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**HENESSY PRODUCTS, INC.**
**BOX 420/CHAMBERSBURG, PENNA.**

Circle 54 on coupon page 52


# IC data systems leap forward fast

(*Continued from page 80*)

systems development—and is giving full backing to the ambitious control projects now in the works, as is Traffic Vice President E. G. Kreyling, Jr., who easily recognizes the potential benefit to service. This kind of top-level support, one project manager notes (perhaps unnecessarily), is of tremendous help in getting the 100% field support without which even the best programs won't work.

● **People, not machines.** All this emphasis on people and personalities merely reflects another of McKechnie's convictions—that data-systems problems are mainly people problems not machine problems, and that the systems designer serves best by keeping his systems as simple as possible, consistent with getting the job done.

This isn't to say that there are *no* machine-connected problems. One that concerns IC people occasionally is the over-selling of computer capability—the kind of thing typified by descriptions of computers talking to computers and doing marvelous things thereby. This, of course, is possible—but, IC systems designers quickly point out, "it's tremendously difficult and expensive, and therefore rarely practical, unless you're talking about a backbone application which can really justify the effort."

IC systems managers also have firm ideas about the ease with which one road can adopt another road's systems. Says McKechnie: "There's just too much difference, road to road, to pick up somebody else's systems and programs. But concepts—that's something else.

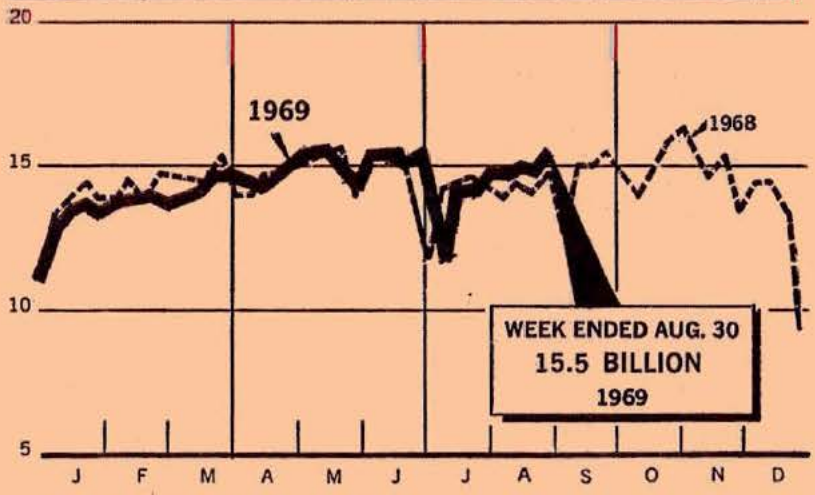
"Concepts can be very interchangeable. Generally, you can take a concept and work out a way to use it on your own property. We just got through talking about one—GN's TPC system. Then, your problem lies in figuring out how important it is that you use it—in developing a priority, in other words."

● **Priorities—and results.** By any standard, one of the top priorities on IC went to development of a communications system—a $4-million microwave network—and a message-switching data-collection system. The over-all price tag on MAIN—for Mid-America Information Network—was set at $15½ million.

What IC is getting for its investment is a communication-and-control capability like nothing ever seen before on the Main Line of Mid-America (plus a return on investment that makes the whole project look like one of the best investments IC ever made). ■

## RAIL FREIGHT TRAFFIC TRENDS

BILLION TON-MILES (Estimated)




Source: Association of American Railroads

## NEW ORDERS FOR MACHINE TOOLS*

| | July 1969 ($000) | July 1968 ($000) | 7 mos. 1969 ($000) | 7 mos. 1968 ($000) |
|---|---|---|---|---|
| Metal cutting tools | 85,350 | 105,650 | 793,850 | 642,250 |
| Metal forming tools | 41,100 | 29,750 | 364,450 | 169,150 |

## MACHINE TOOL SHIPMENTS*

| | July 1969 ($000) | July 1968 ($000) | 7 mos. 1969 ($000) | 7 mos. 1968 ($000) |
|---|---|---|---|---|
| Metal cutting tools | 85,200 | 100,050 | 696,400 | 812,350 |
| Metal forming tools | 27,100 | 26,950 | 222,750 | 211,450 |

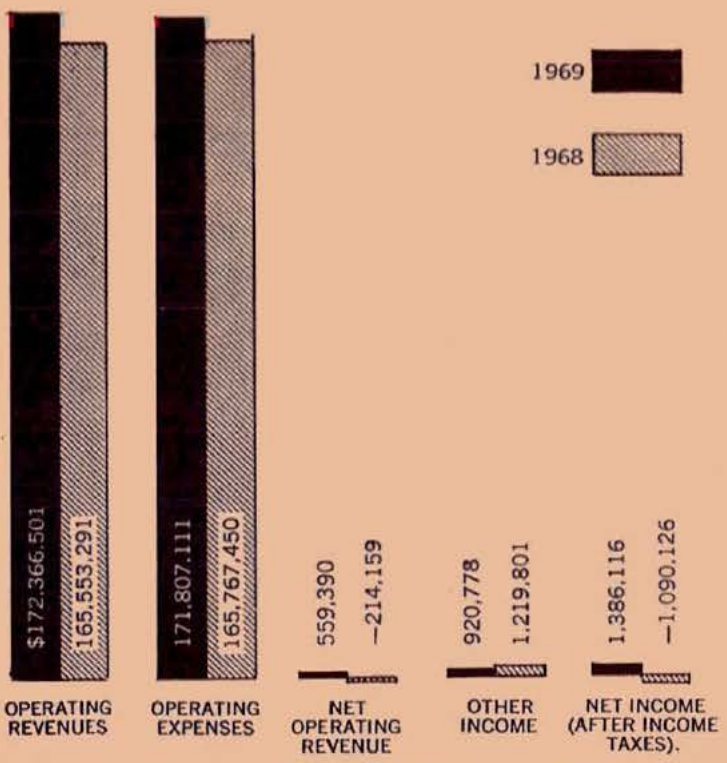
*Including foreign and domestic.
Source: National Machine Tool Builders' Association.

## Current Statistics

| | |
|---|---|
| **Net Income, Class I roads** | |
| Six months, 1969 | $168,000,000 |
| Six months, 1968 | 166,000,000 |
| **New freight cars on order** | |
| Aug. 1, 1969 | 51,233 |
| Aug. 1, 1968 | 16,943 |
| **New freight cars delivered** | |
| 7 mos., 1969 | 37,697 |
| 7 mos., 1968 | 34,858 |
| **Serviceable cars** | |
| Aug. 1, 1969 | 1,365,892 |
| Aug. 1, 1968 | 1,393,000 |

## CLASS I MOTOR CARRIERS OF PASSENGERS

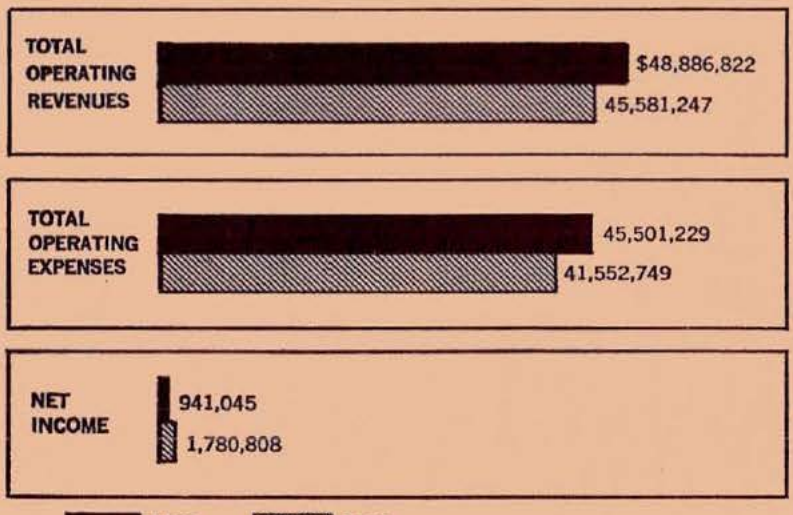
(Selected statistics—first quarter 1969 and 1968)




Source: Bureau of Accounts, ICC. Figures are for intercity and local or suburban operations. Class I motor carriers are those having annual gross operating revenues of $1 million or more.

## FREIGHT FORWARDERS—SELECTED STATISTICS

(FIRST QUARTER 1969 AND 1968)




Source: Bureau of Accounts, ICC. Compiled from 65 quarterly reports of forwarders with annual gross revenues of $100,000 or more.

# MARKET OUTLOOK

## CARLOADINGS

Loadings of revenue freight in the week ended Sept. 6 totaled 498,399 cars, the Association of American Railroads announced on Sept. 12. This was a decrease of 81,750 cars, or 14.1%, compared with the previous week; an increase of 6,427 cars, or 1.3%, compared with the corresponding week last year; and an increase of 10,527 cars, or 2.2%, compared with the equivalent 1967 week. Ton-miles generated by carloadings in the week ended Sept. 6 are estimated at 13.2 billion, an increase of 5.2% above the corresponding week of 1968, and 8.6% above the 1967 week.

REVENUE FREIGHT CARLOADINGS

| Commodity | Aug. 30 week | Preceding week | Per cent change |
|---|---|---|---|
| Grain | 27,668 | 28,615 | − 3.3 |
| Farm products | 12,712 | 12,111 | + 5.0 |
| Metallic ores | 55,878 | 60,831 | − 8.1 |
| Coal | 104,308 | 100,659 | + 3.6 |
| Crushed stone, gravel & sand | 33,752 | 32,499 | + 3.9 |
| Nonmetallic minerals | 11,708 | 11,512 | + 1.7 |
| Grain mill products | 21,109 | 20,169 | + 4.7 |
| Food & kindred products | 25,460 | 24,737 | + 2.9 |
| Primary forest products | 24,915 | 23,820 | + 4.6 |
| Lumber & wood products (except furniture) | 16,188 | 15,957 | + 1.4 |
| Pulp, paper & allied products | 25,133 | 24,487 | + 2.6 |
| Chemicals & allied products | 27,056 | 24,865 | + 8.8 |
| Petroleum products | 11,952 | 11,164 | + 7.1 |
| Stone, clay & glass products | 23,630 | 23,124 | + 2.2 |
| Coke | 7,944 | 7,807 | + 1.8 |
| Metals & products | 29,877 | 27,462 | + 8.8 |
| Motor vehicles & equipment | 22,536 | 18,872 | +19.4 |
| Waste & scrap materials | 14,964 | 14,821 | + 1.0 |
| Forwarder & shipper assn. traffic | 8,482 | 7,634 | +11.1 |
| All other carloads | 73,118 | 70,649 | + 3.5 |
| LCL traffic | 1,759 | 1,811 | − 2.9 |
| Total cars loaded | 580,149 | 563,606 | + 2.9 |

| CUMULATIVE TOTAL, 35 WEEKS | 1969 | 1968 | 1967 |
|---|---|---|---|
| | 18,771,187 | 18,923,158 | 18,769,630 |

## PIGGYBACK CARLOADINGS

U. S. piggyback loadings for the week ended Aug. 30 totaled 31,918 cars, carrying 52,322 trailers, compared with 31,516 cars, carrying 50,602 trailers, in the corresponding 1968 week. Loadings for 1969 up to Aug. 30 totaled 1,023,114 cars, carrying 1,649,834 trailers, compared with 993,457 cars, carrying 1,592,643 trailers, in the corresponding period of 1968.

## IN CANADA

| Cumulative | Revenue Cars Loaded | Total cars Rec'd. from Connections |
|---|---|---|
| Aug. 14, 1969 | 2,212,945 | 760,475 |
| Aug. 14, 1968 | 2,297,145 | 769,548 |

## FREIGHT-TRAIN CARS

● *Dow Chemical.*—Ordered 155 new tank cars on long-term lease from Union Tank Car Co. The order, which amounts to an aggregate carrying capacity of 2,722,200 gallons, includes: 51 fiberglass-insulated 16,000-gallon caustic soda cars; 40 fiberglass-insulated 20,000-gallon general purpose cars; and 40 foam-insulated 90-ton chlorine cars.

● *Trailer Train.*—Ordered an additional 202 cars as follows: 110 89-ft, 4-in. low-level cars from Pullman-Standard; 63 89-ft, 4-in. standard-level cars from Bethlehem; 29 89-ft, 4-in. low-level cars from ACF. This brings purchases of new cars since Jan. 1 to 4,607. As of Sept. 3, TTX had 53,142 cars in service or on order.

● *Western Pacific.*—Is acquiring 200 40-ft, high-cube piggyback trailers from the Comet Corp., Spokane, Wash., at a cost of more than $1 million. The trailers are equipped with interior lading devices.

## CAR OWNERSHIP

● *Serviceable cars.*—Revenue freight cars in serviceable condition owned by Class I railroads on Aug. 1 totaled 1,365,892, compared with 1,393,000 on Aug. 1, 1968, according to most recent AAR Car Service Division report. Estimated total ownership of all railroad- and privately-owned freight cars on Aug. 1 (see table below) was 1,789,751 (average capacity: 65.11 tons), compared with 1,808,237 (average capacity: 63.75 tons), on Aug. 1, 1968.

### ESTIMATED OWNERSHIP—ALL REVENUE FREIGHT CARS

August 1, 1969 vs. August 1, 1968

| | | Box | Covered Hopper | Gondola | Hopper | Flat | Refg. | All Others | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| Class I | 1969 | 545,022 | 124,727 | 193,952 | 401,009 | 70,439 | 53,118 | 54,857 | 1,443,124 |
| | 1968 | 555,912 | 122,944 | 200,468 | 414,534 | 67,436 | 51,757 | 57,069 | 1,470,170 |
| RRO&C Refgs.* | 1969 | 0 | 0 | 0 | 0 | 0 | 46,767 | 0 | 46,767 |
| | 1968 | 0 | 0 | 0 | 0 | 0 | 49,218 | 0 | 49,218 |
| All Other Private | 1969 | 1,108 | 33,007 | 2,121 | 2,261 | 47,821 | 14,065 | 175,454 | 275,837 |
| | 1968 | 1,246 | 28,207 | 286 | 3,833 | 41,550 | 15,170 | 172,737 | 263,029 |
| Class II S&T Cos.† | 1969 | 8,282 | 703 | 4,494 | 7,442 | 556 | 1,428 | 1,118 | 24,023 |
| | 1968 | 9,084 | 889 | 5,071 | 8,307 | 590 | 789 | 1,090 | 25,820 |
| GRAND TOTAL | 1969 | 554,412 | 158,437 | 200,567 | 410,712 | 118,816 | 115,378 | 231,429 | 1,789,751 |
| | 1968 | 566,242 | 152,090 | 205,825 | 426,674 | 109,576 | 116,934 | 230,896 | 1,808,237 |

* Railroad owned and controlled refrigerator car lines.
† Class II railroads and switching and terminal companies.

## NEW FACILITIES

● *Chicago & Eastern Illinois.*—Placed an order with the Signal & Communications Division of WABCO for design and installation of a traffic control system extending from Woodland Jct. to Findlay Jct., Ill., 110 miles. Control will be from a TCC console at Chester, Ill.

# YOU OUGHT TO KNOW

**British Rail awards contracts for new train**

First contracts for a prototype of Britain's Advanced Passenger Train (APT) have been announced by British Rail. They went to: Hawker Siddeley Dynamics, for detailed design and manufacture of suspension and braking systems for the 150-mph experimental train; Leyland Gas Turbines, whose 350-400-hp gas turbine will power the APT on non-electrified lines; and G.E.C.-English Electric for manufacture of lightweight body structures. In the U.S., the Budd Co. is forming a consortium to build the train under license.

**CTA sets date for start-up of new service**

The Chicago Transit Authority will collect the first fares from riders on its new Dan Ryan Expressway median-strip rapid-transit line Sunday, Sept. 28. City and CTA officials will dedicate the line Sept. 26, and after the ceremonies there will be free rides for all. The route will be out of service Sept. 27, as CTA gets ready for the Sunday start-up. Chicago's second new median-strip line—in the Kennedy Expressway—is still under construction.

**"Software" can be patented, U.S. court says**

A U.S. Court of Customs and Patent Appeals has ruled that computer software or programs can be protected by a patent. The reasoning is that a digital computer can be made to perform special calculations that take it out of the ordinary problem-solving category. As with all patents, the Court said that computer programs or software must meet the test of uniqueness. Patent protection for computer programs, said one industry expert, can be an incentive to developing new programs.

**Simple signs still "protect" most crossings**

More than 80% of U. S. rail-highway grade crossings have no more protection than signs, the Federal Highway Administration reports. Only 45,000 of the 225,000 crossings have automatic protective devices. And of the 180,000 crossings with just signs, less than one per cent are improved or eliminated each year. For that reason, a new Federal strategy is needed if the crossing casualty toll (on a steady rise since 1958) is to be cut, FHWA says.

**ICC wants tighter control over train-offs**

As a prelude to the passenger-train storm about to hit Washington, the ICC last week repeated its 1968 request for Congressional authority to tighten its hold on train discontinuances. The ICC request came just a few days before a decision on the Messer report is expected, with a ruling on the Commission's jurisdiction over passenger train operations. And three days of hearings start Sept. 23 before the Senate Surface Transportation Subcommittee on the over-all passenger situation. Last week, ICC asked mainly for a stronger grip on the last train between two cities. ICC wants power to keep such trains running for two years after Commission investigation begins, instead of one year.

**Faulty track not reported before accident**

Before the June 28 passenger train derailment on Penn Central tracks near Glendale, Md., PC was not informed about a rail misalignment found by a track inspector foreman June 25. This testimony by a representative of the Office of High Speed Ground Transportation is included in a summary issued last week by the National Transportation Safety Board. The testimony is from the August hearings before NTSB. No date is set for a final report with determination of probable cause and appropriate recommendations. "The OHSGT representative explained the slight misalignment which was discovered in the track north of Glendale crossing in June prior to the accident. He said the misalignment was within tolerance and, based on experience, was not considered a hazard," the NTSB summary said.

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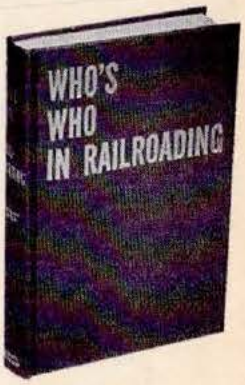


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# Does diversification mean disinvestment?

One of the railroad industry's biggest diversifiers gives a flat "No" to the nagging question, "Does diversification by railroads in fact mean that disinvestment in ordinary railroad operations is ahead," Illinois Central Chairman W. B. Johnson makes two points: As IC Industries has grown, he notes, the rate of capital investment in the railroad has been doubled; and IC is "vigorously pursuing" its proposed merger with Gulf, Mobile & Ohio. Says Johnson: "That isn't the way to get out of the railroad business. By upping the investment ante and by getting larger via merger, you get into the railroad business deeper than before."

Johnson's views were presented at the annual convention of the Economic and Finance Department, Treasury Division of the Association of American Railroads in Quebec, Canada on Sept. 5.

Many diversified firms are successful, are financially sounder and have brighter prospects because they are diversified, notes Johnson. These include such giants as General Electric, RCA, Westinghouse and General Motors. But, he says, the financial community is given to styles in nomenclature, which leads to the current "dirty" word—conglomerate. But the standard definition of conglomerate doesn't quite fit IC Industries, says Johnson, or some of the other railroads that have been diversifying. Railroads tend to diversify "by acquiring or merging with companies that have better price/earnings ratios than the railroads themselves."

"Why do they join IC Industries?" asks Johnson. "Doesn't the railroad have a low rate of return? Doesn't the rail industry have depressing prospects with subsidized competition, unfair regulation, archaic labor practices, and backward technological position? Obviously, such firms must think the rail industry's circumstances *can* be changed and *will* be changed."

● **IC results.** Despite problems, says Johnson, the formation of IC Industries has been anything but bad. Historic growth rates have improved, return on investment has improved, working capital and access to capital markets have improved.

"In our judgement," says Johnson, "these advantages strengthen our rail properties as well as buttress the values of our securities in the hands of the investing public." IC Industries and certain other railroad conglomerates have the sort of explosive earnings potential than can make financial history with a few breaks, he notes.

● **Regulation overhaul due soon.** When one reads of the troubles afflicting airlines, utilities and even the telephone companies—problems of service caused by investment and pricing problems—one realizes that the day is not far away when government regulation will need and get a real overhaul, says Johnson.

If government regulation were not so stringent, he maintains, railroad diversification would have immediately turned to transportation, and coordinated common ownership of transportation modes would prevail today. But with that route closed by obsolete laws, he says that railroads have had no choice but to turn outside the transportation industry. ■


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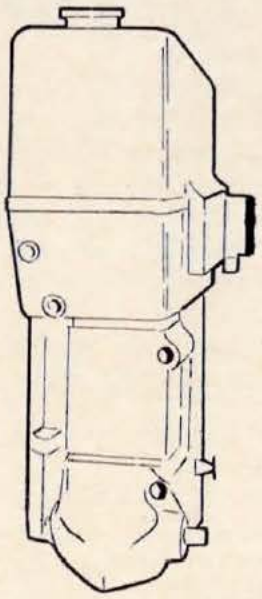

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# VIEWPOINT

## When skepticism isn't healthy

Old industries change slowly. Railroads are an old industry. Therefore, railroads change slowly. True or false? There are exceptions, of course. But too often, the syllogism seems to be true.

This week in Railway Age, for instance, there are at least three articles which will trigger skeptical reactions from anybody who considers himself largely as part of a plus-100-year-old industry.

There will be those who will say that Santa Fe's so-called "coaxial train" just isn't practical . . . that a locomotive simulator is just another piece of expensive and not-very-useful hardware . . . that Illinois Central will never get anywhere in trying to program car-distribution on a computer.

The skeptics could be right — once, twice, three times. But that isn't the point.

The point is that skepticism — a healthy thing to have around, for any businessman — becomes unhealthy when it takes the form of an automatic "No" in the face of anything new or different.

The point is also that railroad men aren't in the position of a baseball umpire or a football referee. Railroad men don't have to make instant and (mostly) irrevocable decisions. Railroad men have time to study the films, the replays.

And so, perhaps the biggest point is this: If there is to be a thing called Tomorrow's Railroads, there has to be not just a willingness to accept but an eagerness to go out and seek the new, the different, the better.

Skepticism has its place today, and it will have its place tomorrow — but that means analytical skepticism, not the snapjudgment kind.

## For UTU: A time to build up

Once again, the railroad industry has a gun at its head. Less than three weeks from now, labor problems may break into the open. Nobody knows, now, exactly what may happen.

The "break" involves four shopcraft unions. But in the time between now and early October, railroads will also be talking with other non-ops representing roughly half of total railroad employment. These unions are demanding 12% wage increases each year for three years (plus fringe benefits). And, little more than a week from now, general chairmen of the United Transportation Union will be meeting — presumably to agree upon their new demands.

UTU's leaders have an opportunity — assuming that they are interested in creating rather than in destroying. To every thing, the book of Ecclesiastes says, "there is a season, and a time to every purpose . . . a time to break down and a time to build up."

If ever there were a season, a time for building-up, it's now. And what a positive thing it would be if UTU leaders were to stand up for the kind of principle that's involved in building-up. This kind of labor-leadership might be easier to create than it sounds. For the sake of tomorrow, it sure deserves a try.

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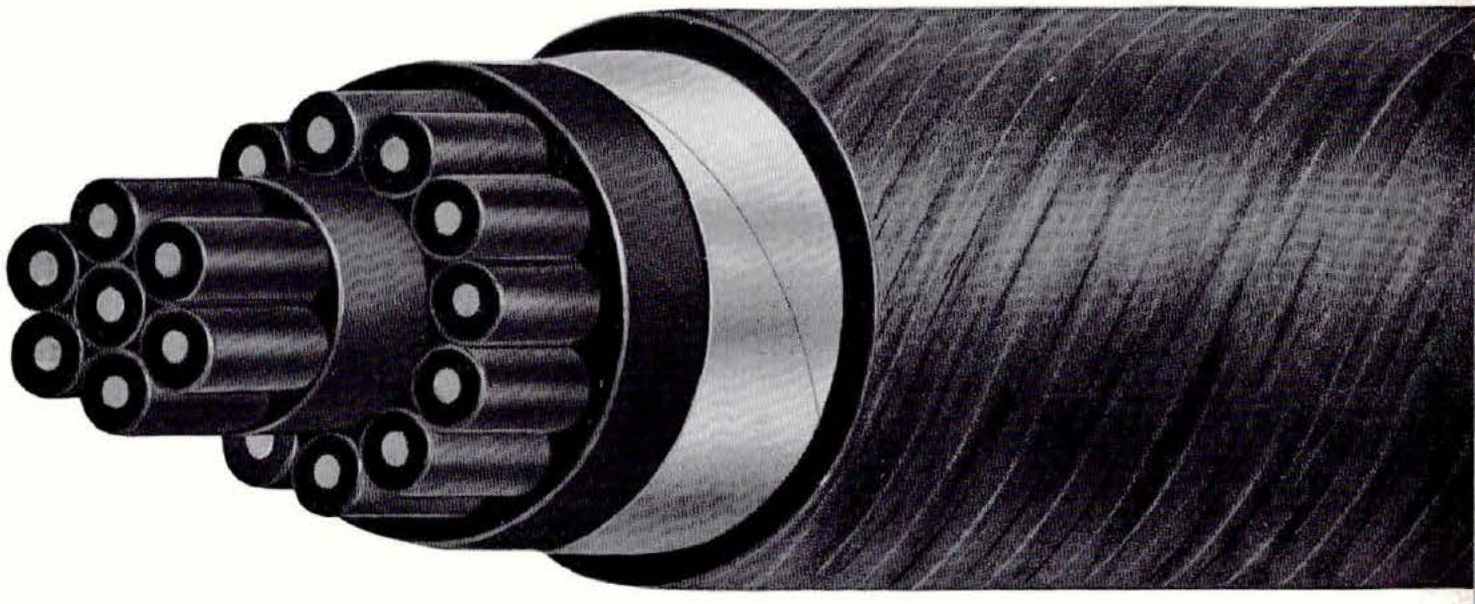

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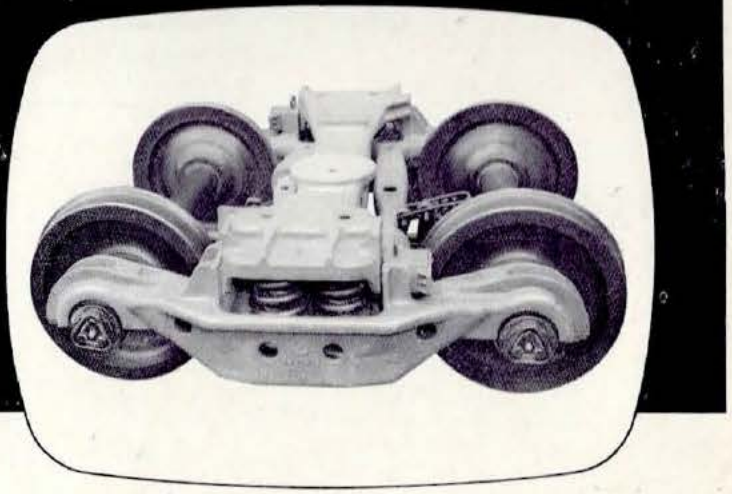

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